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# The Iron Age

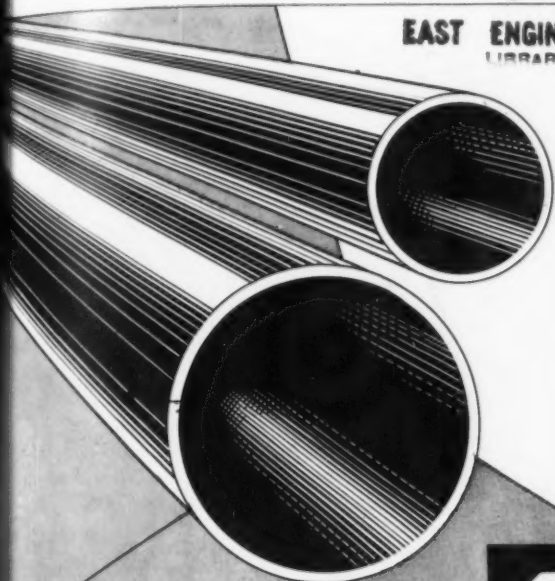
NATIONAL METALWORKING WEEKLY

March 27, 1952

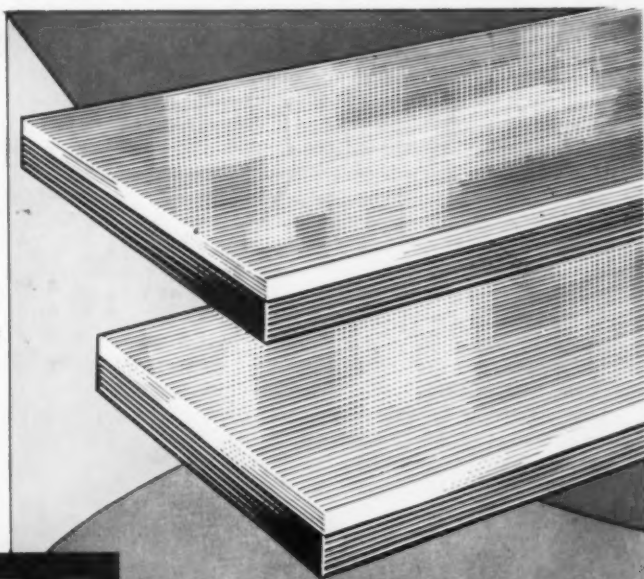
ENTS PAGE 2

MAR 27 1952

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LARGE DIAMETER STEEL PIPE



STAINLESS-CLAD STEEL PLATES



CARBON AND ALLOY PLATES



FLANGED AND DISHED HEADS

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SUBSIDIARY OF THE COLORADO FUEL & IRON CORPORATION

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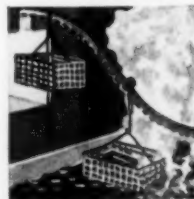
4445 LAWTON AVENUE, DETROIT 2, MICHIGAN



Heating elements made of Hoskins Chromel deliver full-rated power throughout their long and useful life.



Sparks fly better, last longer in today's spark plugs . . . thanks to Hoskins' spark plug electrode alloys.



Hot stuff for hot jobs! Hoskins Alloy 502 is ideally suited to many mechanical-structural applications.





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it in the worst way. With this vital dormant scrap the entire steel supply picture would brighten up, with more steel for everybody. But without it, the steel industry cannot hope to keep up production at present levels.

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## More Scrap Today... More Steel Tomorrow

March 27, 1952

# IRON AGE

MARCH 27, 1952  
VOL. 169, No. 13

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## CONTENTS

★ Starred items are digested on opposite page.

## EDITORIAL We and the Communists ..... 7

## NEWS OF INDUSTRY

★Special Report: Steel Case Headed to White House.....	51
★Management: How You Can Combat Alcoholism.....	53
★Manufacturing: GE Shows Off New Plant.....	54
★Raw Materials: Loss of Red Manganese Wiped Out.....	55
★Tin Price Impasse May Be Breaking.....	56
★International: IMC Snipers Miss Target.....	57
Controls: Lifting Timetable Takes Shape.....	60
Defense Contracts.....	65
Construction Steel News.....	68
Industrial Briefs.....	74
Personnel: Iron Age Salutes.....	85
Iron Age Introduces.....	87
Clearing House.....	178

## NEWS ANALYSIS

Newsfront.....	51
This Week in Washington.....	71
Automotive Assembly Line.....	76
West Coast Report.....	81
★Machine Tool Highspots.....	83

## TECHNICAL ARTICLES

★Machine Makes Cores Faster, Cheaper, Better.....	87
New Books.....	97
★How to Design for Repeated Loads.....	101
Packaging Method Cuts Cost, Saves Space.....	101
★Economy, Speed, and Ingenuity Mark Tool Show.....	105
Ultrasonics Make Soldering Easier.....	105
New Machine Forms Jet Rings.....	106
New Method Tested for Cladding Bullet Jackets.....	108
Big Press Makes Plastic Door Liner.....	110

## MARKETS & PRICES

★The Iron Age Summary—Steel Outlook.....	151
Market Briefs.....	153
Nonferrous Markets.....	154
Iron and Steel Scrap Markets.....	158
Iron and Steel Scrap Prices.....	160
Comparison of Prices.....	162
Steel Prices.....	164
Warehouse Prices.....	168

## REGULAR DEPARTMENTS

Dear Editor.....	9
Fatigue Cracks.....	11
Conventions and Meetings.....	13
Free Publications.....	117
New Equipment.....	122

## INDEX OF ADVERTISERS..... 192

# DIGEST

## of the week in metalworking

### ONLY WHITE HOUSE CAN HALT STEEL STRIKE

PAGE 57  
The steel wage-price dispute is heading inevitably for White House settlement. Producers cannot buy WSB's fat increase for the union unless OPS comes through with higher prices. If industry-union meetings this week should prove fruitless, the need for President Truman to intervene is clear.

### HOW INDUSTRY COMBATS ALCOHOLISM

PAGE 55  
Industry is increasingly instituting health programs to combat alcoholism. An attitude of general benevolence by management is not enough. Expensive facilities are not necessary. Management's role is organizational, executive, using community resources. Education is an essential.

### GE SHOWS OFF ITS NEW APPLIANCE PLANT

PAGE 56  
Not dreaming they would be called in so soon, General Electric suppliers went to see the firm's new "Appliance Park" at Beuchel, Ky. The plant will go ahead first with war work and eventually be diverted to appliance production. Cancelled war work may bring civilian work closer.

### LOST RUSSIAN MANGANESE BALANCED OUT

PAGE 57  
American help to manganese-producing nations has helped wipe out the supply deficit caused by withdrawal of our biggest supplier, Russia. Inadequate transportation, cash, lack of equipment still holds production down but expansion of other sources has proved adequate for needs.

### WILL WE GET MORE TIN AT OUR PRICE?

PAGE 58  
U. S. resistance to inflated tin prices may finally pay off. Foreign producers may now sell us adequate supplies of tin at our price of \$1.18 per lb. RFC is now negotiating with Bolivia and Belgium. Its ace-in-the-hole is recent closing of the Indonesian tin deal: 18,000 tons at \$1.18.

### ANTI-IMC TASK FORCE MISSES THE TARGET

PAGE 59  
Congressmen have hurled charges of "raw materials trust," master plan to control world resources, withdrawal of copper from Detroit in their attack against International Materials Conference. What they have really been firing at has been OPS import controls and DPA priorities.

### GRADED MACHINE TOOL PRIORITIES COMING

PAGE 83  
The long-awaited system of graded machine tool priorities is imminent. It will be a month or so before the plan can take effect. Clay Bedford, government tool expert, says the plan will surpass World War II's E-I-b system. The priorities are the first step in a big plan to help tooling.

### RAMS CORES FASTER, CHEAPER AND BETTER

PAGE 93  
Complex cores can be rammed better, faster and at lower cost in a new, automatic core making machine in use at Buick. Only hand operations left are inserting wires where needed, putting driers in place, and transferring driers with cores to oven conveyor. Turntable indexes five stations.

### DESIGN FOR REPEATED LOADS: DO'S, DON'TS

PAGE 95  
Most parts or structures will stand many repetitions of load almost equal to the static ultimate load. Others fail after very few cycles. Improved design can preclude early failure. First "DO" is to give major attention to stress concentrations rather than average stresses involved.

### ECONOMY, SPEED, INGENUITY AT TOOL SHOW

PAGE 102  
A 1/2 million dollar fire in a section of the exhibition hall and several highly controversial technical papers enlivened the 26th Annual Tool Engineers Show held in Chicago last week. Some 25,000 members, guests and visitors who registered at the show inspected machinery worth \$20 million.

### HOW MUCH WILL STEEL PRICES BE BOOSTED?

PAGE 151  
Big steel wage recommendations have exploded any hope the stabilizers had of limiting steel price rises to Capehart adjustments. Many steel fabricating plants will be hit in two ways: (1) They'll pay a good deal more for their steel; (2) They'll face wage demands at least as big as steel's.

### PRECISION CONTROL SPEEDS SHELL OUTPUT

NEXT WEEK  
Close control at every operation is maintained in production of artillery shells at Chevrolet-St. Louis Shell Div. From the first acetylene "nicking" of the carbon steel billet through packaging and shipment, 55 operations are performed. Top quality is assured by 100 pct checks 41 times.



# THE NEW TIME SAVER



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Starting and stopping are always non-productive, but where starts and stops are numerous and cutting time is a very small part of the entire work cycle—they become a serious time waster!

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This powerful clutch and brake requires no shutdown for adjustment, and has a long, maintenance-free life, time-saving and profitable features.

Write for Catalog N-5 for the complete line.



The time required to shape 7 separate internal grooves in these steel sleeves was reduced 12.5 minutes to 8. minutes, due to the Cincinnati Electro-Magnetic Clutch and Brake.



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## We and the Communists

**D**R. Rudolph Flesch—the down-to-earth author of the “How To Write” books—recently wrote one called “The Art of Clear Thinking.” It is a good book and is not stuffy. One of its themes can be summed up in this sentence: Clear thinking can be based only on our experience.

If you apply that test to yourself and to others you are in for some surprises. Without experience our thinking can be quite fuzzy. Observing the experiences of others and feeling them as though they were our own can contribute to our thinking. That is not easy to do.

Take the ordinary American. He loves his family and he usually likes his job. He is moved emotionally by kindness, honor, bravery and individual integrity. He favors humaneness over force. He places the individual above the state. But he carries his own ideas about honesty into his thoughts about his country.

He does not steal; he does not murder. As a rule, he is not consciously mean and despicable. He will not die for what he thinks is a dishonorable principle unless forced to. When he meets someone else he judges them on his own ideas and experience—not on what experience or thoughts the other person might have.

Now take the Communist. He lives, loves and exists. He is kind to his friends and family—unless it violates the party line. At times he is kind to non-Communists—when he has something to gain. But here the comparison ends. His leaders for years have plotted and blue-printed what is necessary for world communism. They have minutely analyzed our natures and our way of life. They have studied our weaknesses (to them) so they can exploit and use them to further their own ends.

To gain his ends, a Communist will murder, cheat, steal, lie, back-track or do things we can't even understand. He is the most cold-blooded realist in the world.

It is time all of us know the Communists for what they are. We must get over this idea that there is any easy way out of their double talk, double acting and devilish machinations. They have one aim—to ruin us even if it takes years and years.

Until we think of them as *they* are instead of how *we* are, we will make one heartbreaking mistake after another. This applies to our diplomats, to our military and to ourselves.

  
Editor

# **STAINLESS STEEL FOR SUBSTITUTIONS**

If your production is threatened by the short supply of critical materials—stainless steel may be your answer. Several types of stainless steel are in good supply, and are competitive in price with other materials. Latest N. P. A. directives have made certain types of stainless steels obtainable without restrictions.

Our engineering department will be glad to consult with you to see if you can fabricate stainless with your existing tools. You may choose to save money by using lighter gauge material and take advantage of the superior strength of stainless.

For complete technical information and advice, contact the Sharon district office nearest you, or write direct to Sharon Steel Corporation, Sharon, Pennsylvania.



**SHARON STEEL CORPORATION**  
*Sharon, Pennsylvania*



# Dear Editor:

## Letters from readers

### All Things To All People

Sir:  
The editorial in your Mar. 13 issue "All Things To All People" is a very masterful piece of work. I would like to see a copy go to all senators and representatives of this country and if I can have a half dozen copies, I will see that they at least get to two senators and four representatives in my district.

Somewhere in the Bible it says, and I am quoting only from memory, that before you can remove the mote from your brother's eye that you better remove the beam from your own so that you can see more clearly to thereby remove the one from your brother's.

E. L. SOLOMON  
President

Max Solomon Co.  
Pittsburgh

### Power Transmission

Sir:  
Could I have permission to reproduce in one of our future issues of "PTC Bulletin" the article "Power Transmission Through Belts" appearing on p. 104 of your Feb. 21 issue.

E. R. RATH  
Vice-President

Power Transmission Council, Inc.  
New York

### Clarification

Sir:  
I would like to draw your attention to the statistics on p. 448 of your Jan. 3 issue.

The column entitled "Orders Booked" indicates that in 1949 the tonnage booked was double that produced, in 1950 it was nearly triple, and in 1951 the first 9 months was five times.

These figures also indicate that the tonnage being booked, less cancellations, is as much per month as it was per year during World War II. Also according to these figures, the steel foundries should have a backlog of 7 years' production. Obviously there is something wrong with these figures. However serious the demand for steel castings may be we know that it is not this serious and a backlog of 7 years appears fantastic.

Could it be that these orders represent mass duplication?

I would appreciate any comments that your statistical department has to offer because these figures certainly have us puzzled.

W. T. SHUTE  
Works Mgr.—Foundry Div.

Canadian Car & Foundry Co., Ltd.  
Montreal

Here is the explanation given us by the Dept. of Commerce:

Data for both orders booked during the month, less cancellations and unfilled orders at the end of the month, were published in the Facts for Industry releases for 1945 and January and February of 1946. In March 1946 collection of data on orders booked was discontinued.

The statistics published on unfilled orders are not comparable with those for orders booked because the former represents the entire backlog of orders on a specific date whereas orders booked are the orders received during the period covered. As the unfilled orders data represent the total backlog, the monthly figures should not be summarized to derive annual totals.—Ed.

### Graphitic Tools

Sir:

We would be obliged if you would send us 20 copies of the article "Manufacture and Use of Graphitic Tool Steels Show Vast Progress" by A. F. Sprinkle, appearing in your Feb. 28 and Mar. 13 issues.

A. S. JAMESON  
Supervisor of Metallurgical  
Research Laboratories

International Harvester Co.  
Chicago

### Metallizing

Sir:

The article "Metallizing Cuts Marine Maintenance Costs" in your Jan. 31 issue is of particular interest to us in connection with our efforts to conserve critical materials. We would appreciate a reprint for our continued reference.

H. C. WOLFE  
Mills, Petticord & Mills & Associates  
Washington

### Of Interest

Sir:

We would appreciate six reprints of the article "Tungsten Molybdenum Thermocouples" which appeared in your May 31, 1949 issue.

W. PFLUG  
Adamas Carbide Corp.  
Harrison, N. J.

### Hot Top

Sir:

We would appreciate very much receiving three copies of the article "Oxy-Natural Gas Hot-Top Heating Increases Ingot Yield" by A. J. Texter and E. F. Kurzinski from your Feb. 14 issue.

R. P. TOOKE  
Manager—Butler Div.  
Armco Steel Corp.  
Butler, Pa.



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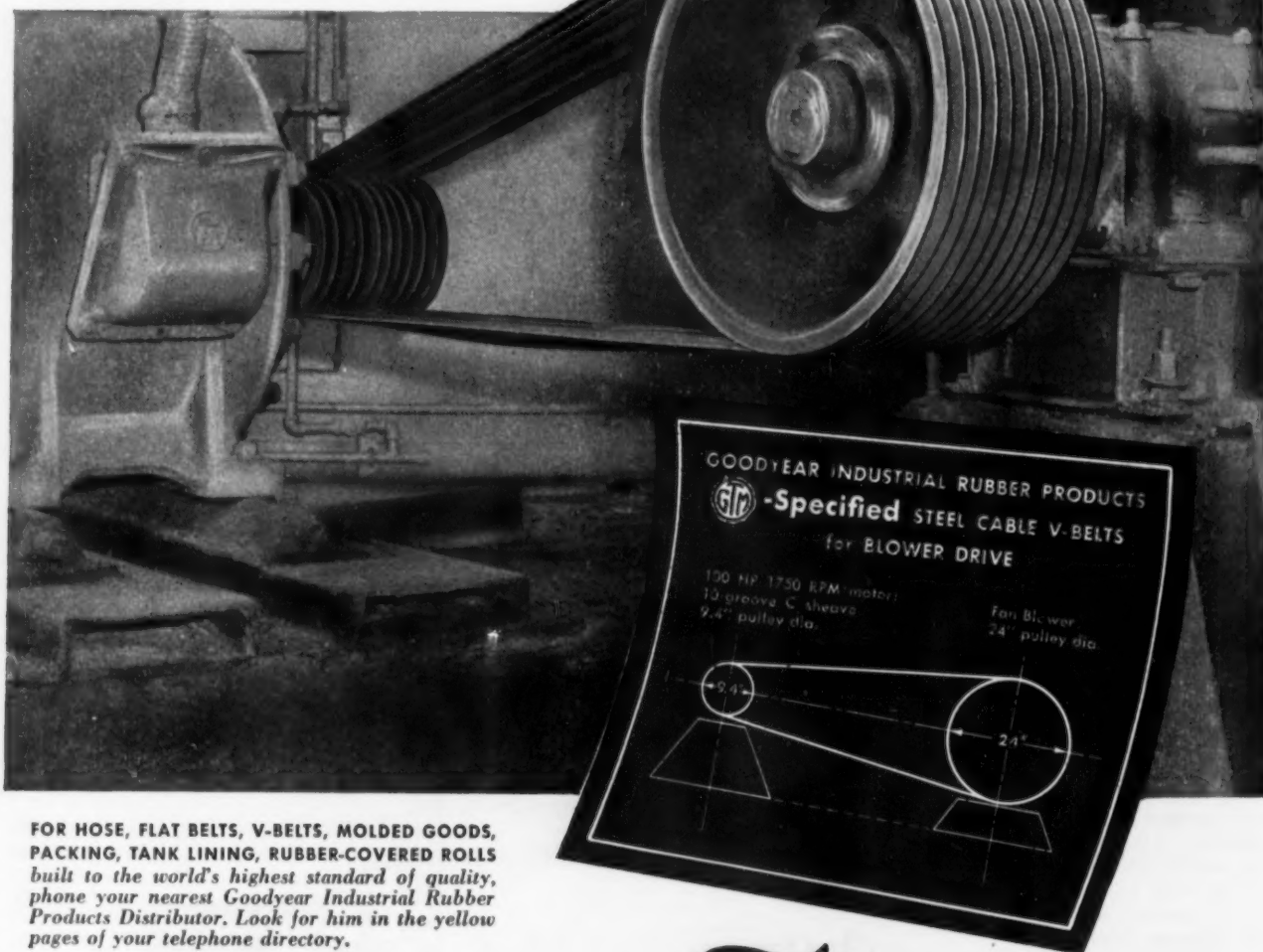
March 27, 1952

# 5 Times the Service

driving air conditioning blower

CONVENTIONAL belts failed in 4 months, due to heavy overload.

G.T.M.—Goodyear Technical Man—specified Steel Cable V-Belts with load-carrying cables of airplane-type steel to handle this problem drive. Steel Cable Belts lasted 20 months 2 days—gave five times the service.



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# GOODYEAR

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## THE IRON AGE Newsfront

► A chemical surface treatment for tools which is now under development promises to increase tool life considerably. A major auto builder is working on the process and several machine tool builders are testing it.

► Trepanning of gun barrels reported to be 10 times faster than conventional spade drilling methods is being used on diameters of less than 2 in. Savings in machining time are even greater on large diameter guns.

► Steel isn't the only metal in which supply is easing. Aluminum fabricators are now clamoring for easing of government end-use restrictions. Even copper, on which there has been a big substitution drive, looks a little easier. Several big copper users are confident of bigger copper allocations for civilian goods production during the second half of this year.

A steel strike would only temporarily harden steel demand and would speed easing in other metals. Aluminum fabricators with heavy defense orders want controls eased now so they won't be caught later with a shortage of civilian orders on their books.

► Five new broaching machines have replaced 64 machine tools in an auto plant at an annual saving of \$250,000 in production costs. The new machines broach internal transmission gears at the rate of 5000 per day.

► Diamond output in French Equatorial Africa, Ivory Coast and Guinea is expected to reach 200,000 carats this year, a gain of 75,000 over 1951. Mining in French East Africa is also expected to pick up substantially. This will help ease, but not end, the U. S. diamond shortage.

► Iron ore mining in Michigan's Upper Peninsula looks more encouraging now than at any time in recent years. Exploration is adding to known reserves faster than mining is depleting them. They are now 20 pct above what they were a decade ago.

► The fact that certain coolants disassociate under the heat and pressure of machining is being applied to the manufacture of chemicals on a commercial basis. Some compounds hard to obtain by ordinary chemical methods are now produced between the "tool and workpiece" on regular machine tools.

► Airborne lifeboats can now be dropped from rescue planes and guided by radio to survivors in the water.

► Latest skirmish in the cold war between the Commerce Dept. and Small Defense Plants Administration is over the former's Government Procurement Manual which lists 5000 items for which federal agencies are in the market.

It started when Secretary Sawyer sent one copy to SDPA chief Taylor, and simultaneously issued a publicity release describing the manual and the gift. One week later SDPA still had only one copy in Washington and the Commerce Dept. had none for newsmen. Eventually, they will be available for reference in Commerce and SDPA offices, federal buying offices and local chambers of commerce.

► The Air Force has awarded to Consolidated Vultee a \$200,000 contract to develop the application of titanium alloys for jet engine pods.



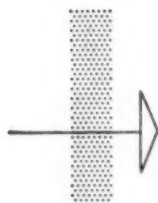
Dow Corning Silicones

hold electrical failures **DOWN..** production **UP**



These silicone-glass spacer disks and tubes were installed 11 months ago. Switches have never required tightening and the silicone-glass laminates are in excellent condition. Plant engineers expect these parts to last several years. They have already repaid their original cost many times in increased production, reduced maintenance and down time.

These cotton-phenolic spacer disks and tubes were used to insulate the knife-switches on a 45,000 ampere graphitizing transformer. Operating temperature ranging from 400 to 500°F., converted the organic insulators to charred, cracked, shrunken conductors in less than 30 days. Constant shrinkage required daily tightening of switches. Replacement meant loss of an entire day's production.



Performance of the silicone-glass laminates described above is typical of all electrical insulating materials made with Dow Corning silicones. In fact, the tougher your operating problem the faster these remarkable materials pay for themselves. That's true of all silicone products including electrical insulating varnishes; oils and greases for special high and low temperature lubrication; protective coatings; water repellents; or, Silastic® seals and gaskets that remain flexible and resilient over a temperature span of 600° from -100 to over 500°F. They cut maintenance costs; step-up production.

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# STEEL: Only White House Can Avert Strike

**WSB votes 26¢ package . . . Industry figures it 30¢ . . . Steel firms will reject it . . . Industry WSB members outvoted by labor, public . . . Price relief a must—By J. B. Delaney.**

The steel labor dispute is headed for a White House settlement. This is the reason:

Steel producers will not "buy" the "fair and equitable" solution proposed by the Wage Stabilization Board—and the United Steelworkers of America (CIO) is not likely to settle for less.

Union-industry bargaining, to be resumed this week, will prove just as fruitless as had negotiations before WSB took over.

**Showdown**—After 4 months, the case has reached the point where President Truman must intervene if an industry-wide strike is to be averted. Both sides are agreed that this is the showdown. With Apr. 8 as the latest strike deadline, time is running out.

Chief roadblock to an agreement is a price increase to offset cost of wage and fringe recommendations of WSB. This is substantial: More than 26¢ per hr in direct cost by WSB computations by Jan. 1, 1953—30¢ per hr by industry estimate. The indus-

try adds another 30¢ for indirect cost increases.

Running a close second to prices is the union shop, another WSB recommendation. This is important enough to some producers that they seem likely to risk a strike rather than agree to it.

**Price Key**—President Truman knows that his price-wage stabilization program is hanging in the balance. His price controllers have told the industry they are not free, under the law, to grant price concessions for cost increases, excepting for the period from start of the Korean War to last July 26. This would be between \$2 and \$3 per ton. The industry wants to include the increased labor costs, and indicates price concessions of \$12 per ton would be more of a fair trade.

This week Mr. Murray made it clear that he will use a steel wage increase as a stepping stone for another wage rise within his union. He said the union expects to get for 500,000 members in steel fabricat-

ing plants increases similar to the ones recommended by WSB.

As expected, Defense Mobilizer Wilson went to the Florida "White House" to talk steel with the President. Upon his return he was expected to confer with both sides.

There was also an indication from Office of Price Stabilization that its adamant stand on trivial Capehart steel price increases may be abandoned in favor of more realistic rises. These are not expected to approach the \$12 per ton industry says it needs. Some quarters say that half of this amount may be awarded.

The President's problem is to somehow satisfy the industry and still save his stabilization program. The union is no longer a problem. It is satisfied, even elated, with the WSB recommendations.

The WSB settlement proposals were more favorable to the union than perhaps even union leaders had dared hope for. This was apparent in the prompt acceptance of the recommendations and postponement of a strike threatened for last Sunday midnight.

**Industry Dissents** — Industry members of WSB (outnumbered



**IN SESSION:** Five members of Wage Stabilization Board present the government's recommendation for a steel wage rise. Left to right: Fred Bullen, vice chairman; Chairman Nathan Feinsinger; William C. Birthright, AFL board member; Joseph Beirne, CIO member; and Emil Rieve, CIO member. Industry members dissented but were voted down. The cards were stacked against them from the first.

8 to 4) felt otherwise. They called the recommendations union appeasement. They said the increases recommended are far greater than any increase ever voluntarily bargained or recommended in the steel industry. They labeled the proposals unstabilizing.

On the union shop, industry members accused the Board of prejudging an issue belonging in the field of collective bargaining and of risking increased industrial strife since other unions will be inclined to bring the issue to the board.

**Nice Package**—This is what Phil Murray, union president, could report to his membership: A recommendation for (1) 12.5¢ an hr pay boost retroactive to last Jan. 1, plus 2.5¢ additional effective July 1 and another 2.5¢ effective Jan. 1, 1953. (2) The union shop, (3) reduction of North-South pay differentials by 5¢ per hr (now 10 cents), (4) increase of shift differentials from the present 4¢ and 6¢ to 6¢ and 9¢, respectively, (5) double time for six holidays when worked, straight time when not worked, (6) three weeks vacation pay for 15-year employees as opposed to the present 25-year requirement.

The Board also proposed that steel producers, beginning Jan. 1, 1953, begin paying time and one-quarter for work done on Sunday. The union had asked for time and one-half for Saturday work, double time for Sunday. The recommendations would be incorporated in an 18-month contract to expire June 1, 1953.

Management also suffered by the Board's refusal to recommend changes with respect to local working conditions, management rights, and job structure.

**The WSB Breakdown**—This is the WSB estimate of cost to producers: Wages, 17.5¢ per hr; shift differentials, 1.2¢; paid holidays, 3.3¢; vacations, 0.6¢; Sunday premium, 3.5¢. The industry estimate was slightly higher on the fringes and went to a total of 30¢

when increased payroll taxes and pension costs were included.

On the basis of industry testimony before WSB a 30-cents-an-hr increase in labor costs would cost basic steel more than \$1 billion per year including extension of the pay boost to salaried employees.

**Subject for Bargaining** — The union's demand for a guaranteed annual wage was referred back for joint consideration with the suggested aid of neutral third parties "with a view to reaching mutual understanding by the time of the next negotiation." Demand for severance pay and improved reporting allowance should also be considered in this category, the board suggested.

On other issues WSB recommended negotiation on premium pay for "sporadic rescheduling" and split shifts, withdrawal of union demands for limitations on contracting out, technological demotions, and negotiation on incentives and seniority issues.

### Help to New England Jobless

A special government task force has been assigned the job of helping relieve unemployment among metalworking plants in the New England area, especially in the Providence-Attleboro region.

A survey will be made immedi-

ately to determine which plants have laid off workers or have shut down, and what the possibilities are for these shops and factories to take on defense subcontracts without much retooling. The committee, composed of representatives of most defense agencies and the Labor Dept. will then try to direct contracts into such plants.

### UAW Continues Communist Purge

Repercussions of the House Un-American Activities Committee's probe of Local 600 (UAW) continued long after the congressmen left town. So many of the local's members were named in testimony before the committee that control of the huge Ford union was taken over by UAW's executive board.

A 4-man administrative committee took over control of the local, then launched a probe and possibly a purge of Reds within the union. Five were immediately removed from the Board of Administrators and as many as 30 more were predicted to be on their way out.

Getting into the act on the state level, an assistant attorney general and the state police began an investigation of alleged Red activity at Buick Local 599 at Flint, Mich.

### Canada Watches Steel Settlement

Canadian industries are vitally interested in the eventual solution of the steel wage problem in this country. They believe it will have a strong influence on bargaining now getting hot in Canada.

The CIO Steelworkers' Union, already very strong, is trying to spread its solid bargaining bloc to include steel fabricating firms. Fabricators are resisting, but whether they will be able to withstand growing union pressure is a tossup.

Many in industry are worried that growing union power might be used to hammer out expensive gains for labor—gains which could backfire on Canada's burgeoning young industries.

Canadian wages are generally lower than those in the U. S., but have been following about the same pattern of increases.



W. H. ATALO

THE IRON AGE

"Stopped clock watching all right, but now they scrap about who turns it over."



# ALCOHOLISM: How About Your Plant?

**Industry instituting programs to combat it . . . Expensive facilities, involvement in controversies unnecessary . . . Role of management is organizational, educational—By G. G. Carr.**

Alcoholism has been called our No. 1 public health problem by the U. S. Surgeon General. It costs industry at least \$1 billion annually. (THE IRON AGE, Feb. 21, 1952, p. 51.) Surveys showed that an estimated 1,370,000 alcoholics were regularly employed in industry in 1947. The figure may well be higher in today's expanded labor market.

Approaches to the problem vary. There is no magic pill to cure the alcoholic. Individual alcoholics require individual treatment. And management attitudes vary widely.

Some executives don't want to get involved. They envision establishing clinics, hiring psychiatrists, and other expensive, elaborate procedures. There is also sensitivity to charges of meddling in employees' private affairs, or taking sides in Wet-Dry controversies.

**Kind Hearts**—A policy of general benevolence is frequently adopted as a way out. Employees whose drinking noticeably affects their work are given a series of last chances, leaves of absence to get straightened out, or even transfers to branches in other areas.

Such well-intentioned policies almost inevitably fail. Inept attempts to seriously interfere with their drinking will trigger many alcoholics into epic binges. Some drinkers will of course have to be fired, no matter what policy is adopted. Industry cannot be expected to tolerate anyone who is seriously hindering production or endangering his fellow-workers.

**Not Impossible** — Constructive action need be neither complicated nor costly. Management participation is organizational, executive, not clinical. Most communities have resources for treatment. Industry's best contribution is to make these services available to its employees.

Ideally, an industrial program should be administered by the plant medical department. If this is not possible, the personnel department is the logical second choice. In any

## What Not to Do

### DON'T

**Preach**—Alcoholics are experts on sermons. They've heard them all. Science, not words, cures disease.

**Take Sides**—Wet-Dry fights can be very bitter. Alcoholism is a health problem.

**Penalize**—Programs should not be used to gather evidence for disciplinary action.

**Snoop** — Employees receiving treatment should be ensured privacy. The doctor-patient relationship is essential.

**Get Discouraged**—There is no fast cure. Like diabetes, there is no absolute "cure". Some slips during treatment, some failures are inevitable.

**Be Surprised**—Employees frequently have drinking problems which don't yet show in their work. Early cases are the easiest to treat.

event, the administrator should be chosen for his capacity for sympathetic understanding.

With the possible exception of the very largest firms, most plants will not find in-plant treatment feasible. Referral to agencies in the community is the usual procedure. Company legal departments and credit unions can help straighten out patients' affairs once rehabilitation has begun.

**Help Available** — Most states now have alcoholism commissions. Local doctors, clergymen, hospitals, and welfare agencies can all help.

Caution: Misunderstanding of alcoholism is not limited to businessmen. Even many doctors are not yet aware of the real nature of the problem. Local chapters of Alcoholics Anonymous can recommend people in the community to approach. But A. A. alone is not the whole answer. The problem is too complex for any one group.

Education is one of management's biggest jobs in any industrial health problem. It is doubly important in alcoholism. The educational cycle may have to start with top executives. It is essential that supervisors be well grounded in fundamentals. This group will be most immediately aware of the incidence of alcoholism.

Instructional materials are available from several sources. State commissions, the National Committee on Alcoholism, with headquarters in New York, and the Yale Center of Alcohol Studies, New Haven, have been very active in developing them. But, warns Dr. Seldon D. Bacon, director of the Yale Center, don't just stick up a lot of posters and let it go at that. Posters, pay envelope stuffers, and the like are useful, but only after the groundwork has already been established.

**Ounce of Prevention** — Many plants with alcoholism programs have been surprised at the number of employees applying for assistance. Frequently these have been both men and women whose drinking has been an acute personal problem, but whose work has not yet been noticeably affected.

Recent experiences have upset the old "20 minutes to get drunk, but 20 years to become an alcoholic" adage. Like other industrial health measures, alcoholism programs are often most effective as preventive medicine. Education and facilities for early treatment can save both management and workers money, time and trouble later when symptoms reach the stage where they become too marked to be ignored and dismissal becomes the only solution.

## APPLIANCES: GE Shows New Plant

**All manufacturing to be done at Louisville plant in future . . . Jet engine order cancellation permits tool diversion to civilian goods . . . Sales increases seen**—By E. C. Beaudet.

Some 400 to 500 General Electric suppliers gathered in Louisville last week to attend a suppliers' conference and exhibit at the future home of all GE major appliance production. When completed, "Appliance Park," located in nearby Beuchel, will turn out 6240 units every 8-hr shift. Suppliers were anxious to find out where they will fit in this changing purchasing picture.

Although the plant had always been slated for eventual appliance production, suppliers never dreamed they would be called in this soon. Until about 6 weeks ago the Air Force had placed with GE a \$14.9 million production contract for the output of J-47 engine components in the first of five manufacturing buildings to be erected. Machining operations on jet engine parts were to have started in February and finished parts were due to roll off limited production lines this month.

Contract was cancelled due to the

Air Force's rescheduling of requirements over a longer period. At the time of cancellation less than 5 pct of the machine tools needed were in GE's possession. These as well as machine tools in process will be diverted to existing facilities already engaged in J-47 component production. Machine tools on order but not in production have been cancelled.

**Faster Start-Up**—Cancellation of the contract enabled GE to get on with their centralization of major appliance production a lot sooner. Electric dishwashers, room coolers, automatic clothes washers and dryers are expected to be in production by the end of this year. Ranges will follow in 1953.

Only three of the planned five manufacturing buildings, averaging 500,000 sq ft of floor space each are now under construction. Completion of the entire plant is expected in 3 to 5 years.

From all appearances the selection of Louisville as the center of all major appliance production seems to be a wise one. Excellent water transportation will make possible low cost barge shipments of sheet steel from a great many steel producing centers located on the waterways. This will result in considerable savings when it is realized that 80 pct of the sheets, excluding silicon sheets, purchased by GE goes into major appliance output.

**Rail Facilities**—Excellent rail facilities will make possible an in-and-out traffic of 300 cars per day. Labor supply within a 15-mile radius of the plant is said to be adequate for the plant's needs, which will eventually be 15,000 workers.

All these advantages tie in quite nicely with the fact that Louisville is almost the exact center of major appliance distribution in the country—hence lower shipping costs. Concentration of production will enable GE to gain more efficient production through pooling of appliance engineering and know-how as well as the ability to ship mixed car lots of appliances to dealers.

How does the market for appliances look to GE? It looks good. Company officials estimate a jump of \$1.5 billion in major appliance sales over the \$3 billion sold in 1951 during the next 10 years. Greatest growth will come from items now with low saturation points. For example, automatic washer sales last year came to 1.55 million units with a saturation of 12.8 pct. Saturation is expected to reach 39 pct in 1960 with sales of 2.6 million units.

**More Parts Buying**—Where do present suppliers fit in the picture? The new physical location plus a continued study of whether to make or purchase a part will no doubt cause a change in many relationships the division now has with its 1500 suppliers. However, competition and good deliveries will still play the major part in determining purchasing policy. In addition, GE expects to spend \$50 million more for parts and materials in 1960 than it did last year.



**SHOW GOES ON:** A fire that caused \$750,000 damage also threatened to wreck the timetable of the American Society of Tool Engineers' Industrial Exposition at Chicago last week. Fourteen booths were destroyed. Working all night, exhibitors met the opening deadline. All but two had put together makeshift displays. Faulty wiring was blamed for the fire.

## MANGANESE: Red Loss Wiped Out

**Plenty available in free world . . . Transportation, equipment needed to boost shipments . . . U. S. helps . . . Russian deficit filled by free countries . . . Outlook brightens—By W. W. Taylor.**

Although no steel production has been lost for lack of manganese, procurement of this vital steelmaking ingredient remains a serious problem. Industry and government have done a fine job of locating alternate sources since the Russian Iron Curtain started shutting off our biggest source of the strategic material about 3 years ago.

The free world has fairly abundant reserves of manganese. But adequate transportation, funds, and equipment have made it difficult to boost shipments of producing nations.

**Offset Red Loss—**These obstacles have been met head-on with assistance from the United States. Through the Mutual Security Agency and private interests, mining, transportation and other equipment has been made available to a few exporting countries. This help is already paying off.

Shipments from India, Union of South Africa, and the Gold Coast have been rising so fast that they now offset loss of Russian supplies. In 1948 combined shipments from these countries equaled 44 pct of our imports, while Russia supplied 34 pct. Now these countries are supplying more than 70 pct of our imports while we get none from Russia.

**The Outlook—**India has been pressed for manganese production by western European nations now restoring steelmaking capacities, resulting in greater competition among free-world consumers. Although she has been cooperative in the past, beyond commitments, it can not be expected that she will be able to continue to supply all demands in the near future. At least not until expanded facilities can be realized.

As for the Union of So. Africa

a serious lack of railroad cars continues to prevent transporting of available ore to ports for shipment. Not experiencing difficulties such as India or South Africa, the Gold Coast continues to supply a high-grade ore, and production from a new mine is expected during the coming year.

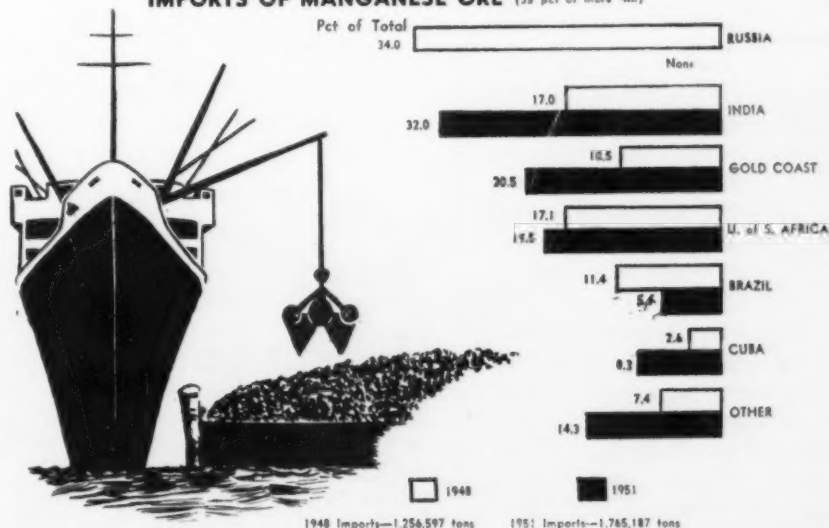
**Brazil Bonanza—**An important future source of supply is Brazil. Shipments from there have declined recently because of need for home consumption. But, in co-

show an output of 100,000 tons a year or more that should be effective in the current year.

**Domestic Sources —**Shipments of manganese ore from domestic mines remained virtually unchanged until shortly after 1948. At that time deposits in Montana produced 119,339 of the 119,828 ton total of U. S. production. Since 1948, however, government sponsored exploration grants have uncovered new sources which promise a sharp increase in production. By 1954 it is estimated that American mines will be yielding 250,000 tons annually.

Another development expected to aid greatly is the recovery of manganese from openhearth slag (IRON AGE, Dec. 6, 1951, p. 111). Successfully operated, it is hoped

**IMPORTS OF MANGANESE ORE (35 pct or more Mn)**



operation with U. S. steel producers, the country is in the midst of an extensive manganese development program. This will open large new deposits.

Here, again, the biggest task has been in construction of roads, railways, river barge and port facilities. Actual mining problems are duck soup compared with transportation, as the ore virtually lies ready for the "picking" (THE IRON AGE, Feb. 22, 1951, p. 89).

Other important sources will be the Belgian Congo and a revitalized activity in the U. S. The Bureau of Mines says the Congo will

this technological advance might enable salvaging one-third or more of the nation's requirements.

Manganese recovery from slag might prove a lifesaver in event of war. Present extended supply lines from divergent sources could prove vulnerable. That's why officials urge continued aggressive procurement and conservation.

The program of developing new sources and processes will continue. Red losses have been offset. We are ready to start operating in the black. Barring all out war our manganese supply should be in good shape in 2 years.



## TIN: Greater Supply at Our Price?

**Indonesian deal may pave the way for Bolivian and Belgian contracts . . . Present \$1.21½ price likely to hold for some time . . . Importers want free market soon—By R. L. Hatschek.**

Will foreign producers finally lower their resistance and sell us adequate supplies of tin at our prices? The turning point to the trend may have been reached as a result of Washington's rejection of what it considered inflated tin prices. Negotiations are now going on between Reconstruction Finance Corp., U. S. tin buying agency, and Bolivian and Belgian tin interests.

And RFC has had a stronger bargaining hand dealt it through the recent closing of the Indonesian tin deal under which 18,000 tons a year will be sold to the U. S. at \$1.18 per lb for the next 2 years.

A negotiated price must be reached for the third year of the contract. This \$1.18 price is being paid to Great Britain for the 20,000 tons it will ship us in 1952. Each new agreement at that price strengthens RFC's firm stand on prices.

**High Cost Mines**—Bolivian mines are generally conceded to be high-cost operations but Washington views Bolivian demand of \$1.50 per lb as much too high. Many people here feel that the Bolivian producers could sell profitably at the offered \$1.18 because of other considerations such as cheap labor. One clause of the Indonesian and British contracts states that if the U. S. contracts for tin at a price higher than \$1.18 at another port of shipment, the Indonesians and the British must get the higher price.

A total of 38,000 tons of tin is already under contract for 1952 delivery. Another 7000 tons from Belgium and possibly 15,000 tons from Bolivia may be added to the 1952 supply. Negotiators repre-

sending all parties have indicated optimism for future tin agreements. Bolivia is said to have large stocks of concentrates on hand ready to ship.

Besides this, RFC is making purchases in world markets whenever prices are favorable.

**Consumption Record**—Domestic tin consumption last year was about 61,520 tons; in 1950 it was 71,744 tons, in 1949 it was 47,163 tons and for the 4 prior years tin use averaged about 57,000 tons. The all-time high was 103,086 tons consumed in 1941.

**Stockpile Insurance**—RFC stocks of tin are practically negligible. But the strategic stockpile is said to contain a vast quantity of the metal. This provides a backstop against any real hardship and has been our ace-in-the-hole. Trade feeling is that before the government pays what it considers too high a price the stockpile will be tapped.

General consensus of the tin trade is that these contracts at \$1.18 f.o.b port of shipment will keep the U. S. price at \$1.21½ for some time to come. Feeling is also that RFC will hold the tin-buying reins for at least the next year.

**Price Trend**—Here's the recent price record: Before the Korean war started tin was selling at about 75¢ per lb. Then the price soared to \$1.84 and RFC took over, gradually reducing the price to \$1.06. The \$1.21½ price was established with the closing of the British deal at \$1.18 f.o.b. Malaya.

Tin importers would like to get back to their main line of business as soon as possible. They argue that a free market today would be a good thing. First point is that world production has outrun consumption for the past few years. Supply-demand balance is quick to establish a realistic price for any commodity and the trade feels that it would take very little time under present conditions for tin prices to drop.

### Boost Metal Quotas

Producers of consumer durable goods will get bigger supplies of basic metals in the third quarter. Permitted use will be 65 pct of the steel, 40 pct of the copper and 50 pct of the aluminum they used in the pre-Korea base period. These compare with percentages of 50, 30 and 30, respectively, in the second quarter.

### STEEL: January Shipments Down

As Reported to the American Iron & Steel Institute

STEEL PRODUCTS	CURRENT MONTH				Pct of Total Shipments
	Carbon	Alloy	Stainless	Total	
Ingot	61,122	28,385	1,538	91,045	1.4
Blooms, slabs, billets, tube rounds, sheet bars, etc.	138,063	54,509	1,701	194,273	3.0
Skelp	13,591			13,591	0.2
Wire rods	67,418	1,851	706	69,975	1.1
Structural shapes	422,984	4,060	5	427,049	6.5
Steel piling	25,522			25,522	0.4
Plates	671,131	33,859	2,388	707,378	10.7
Rails—standard	145,092	26		145,118	2.2
Rails—all other	11,302	10		11,312	0.2
Joint bars	12,389			12,389	0.2
Tie plates	41,420			41,420	0.6
Track spikes	10,920			10,920	0.2
Wheels	33,127	18		33,145	0.5
Axles	15,987	65		16,052	0.2
Bars—hot rolled	587,759	205,320	4,386	797,475	12.1
Bars—reinforcing	167,733			167,733	2.5
Bars—cold finished	151,205	32,655	4,452	188,312	2.9
Tool steel	2,835	11,415		14,250	0.2
Standard pipe	238,751	129	1	238,881	3.6
Oil country goods	122,379	12,543		134,922	2.0
Line pipe	316,859			316,859	4.8
Mech. tubing	56,285	27,282	542	84,109	1.3
Pressure tubing	31,389	3,686	1,063	36,140	0.6
Wire—drawn	257,686	5,161	3,034	265,881	4.0
Wire—nails, staples	70,877			70,877	1.1
Wire—barbed, twisted	24,607			24,607	0.4
Wire—woven fence	35,384			35,384	0.5
Wire—bale ties	9,793			9,793	0.2
Black plate	96,937			96,937	1.5
Tin & tern plate—hot dipped	84,850			84,850	1.3
Tin plate—electrolytic	213,014			213,014	3.2
Sheets—hot rolled	595,496	24,186	2,458	623,159	9.5
Sheets—cold rolled	740,722	9,732	10,083	760,537	11.5
Sheets—galvanized	165,196			165,196	2.5
Sheets—other coated	22,367			22,367	0.3
Sheets—enameling	13,820			13,820	0.2
Electrical sheets, strip	8,145	60,685		68,830	0.9
Strip—hot rolled	182,871	2,542	802	186,215	2.8
Strip—cold rolled	164,914	2,255	12,687	179,856	2.7
<b>TOTAL</b>	<b>6,032,942</b>	<b>510,393</b>	<b>45,858</b>	<b>6,589,193</b>	<b>100.0</b>

During 1950 the companies included above represented 99.0% of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

# MATERIALS: Who Caused Shortages?

**Congressmen attack IMC . . . Really strike at price controls, priorities . . . Say IMC's raw materials trust . . . It covers few items, no prices . . . Who held copper back?—By T. Metaxas.**

Unheeding of International Materials Conference's emergency period motives and limited scope, many Congressmen have blundered into an assault against the agency. They have charged it with crimes it never committed and judged it guilty before the detective work part of the investigation began. From the first phase of the attack it was evident that opponents of IMC were firing wildly at the wrong target.

Instead, legislative shrapnel is striking near Office of Price Stabilization and Defense Production Administration.

IMC was formed last year to distribute equitably limited supplies of a few critical raw materials and to halt frenzied auction style bidding among Free World Nations working towards a common rearmament goal. Through unanimous agreement of committees representing 28 consuming and producing nations, IMC recommends allocations of nine critical materials. Seven are indispensable to rearmament: copper, zinc, sulfur, molybdenum, tungsten, nickel, cobalt.

**Villain's Role**—A 70-man Congressional group is following the lead of Sen. Homer Ferguson (R., Mich.) by conducting an inquiry which somehow intends to prove that IMC played the villain's role in causing U. S. shortages and manufacturing cutbacks. IMC was first set up as a fat target by Sen. Ferguson when he blamed it for withholding 3000 tons of needed copper from Detroit automakers, resulting in deeper production cutbacks and unemployment. He was seconded by Rep. Martin (R., Mass.), a leader in the Congressional probe, who termed IMC "a mysterious, extra-legal, super cartel."

Sen. Ferguson added to IMC's discomfiture by calling it an "in-

ternational raw materials trust" with its hands in the American taxpayer's pocket. Last week he introduced a bill before the Senate Banking Commission which involves IMC but is more of an attack on OPS and DPA.

His bill would permit American firms to buy abroad and import

## What U. S. Gets

IMC has told THE IRON AGE that it will erase from its agenda any metals or minerals that come into ample supply. Congressmen have taken an off-hand swipe at the State Dept. for masterminding a scheme to control the world's resources. Yet IMC bargainers for the U.S. get their instructions from Defense Production Administration.

Under first quarter '52 IMC allocations America is given a hunting license to get the following percentages of Free World production: Copper, 49 pct; nickel, 68 pct; tungsten, 47 pct; molybdenum, 76 pct; cobalt, 62 pct; sulfur, 75 pct, and zinc, 47 pct.

without limitations any material produced in sufficient quantity here to meet defense, essential civilian, and stockpiling needs. Of the IMC commodities he means copper—for zinc is now in adequate supply and nickel, tungsten, cobalt are ineligible because the U. S. produces pathetic amounts. He can't mean IMC-allocated sulfur and molybdenum because America has a near-monopoly.

But if Sen. Ferguson's bill gives American producers the right to sell any adequate raw materials unrestrictedly to foreign buyers, this would have the effect of withdrawing sulfur and moly from IMC allocation control.

**Wrong Culprit** — The Senator may be on the right track towards getting Detroit the right to buy foreign copper but the route he is taking is devious. IMC recommended generous allotments of copper to the U. S. But American manufacturers were unable to fill the quota because of Office of Price Stabilization's 27½¢ per lb ceiling on copper imports. When Sen. Ferguson was blasting IMC for barring Detroit from world markets, the foreign price was nearer 60¢ per lb and Americans were unable to buy. It's now 40¢.

IMC coverage of raw materials is limited, restricted to a few vital commodities, most of which are not produced heavily in the U. S. But the Ferguson bill could drag in numerous raw materials outside of IMC. This would be a sledgehammer blow not only to OPS control of import prices but to the structure of DPA priority controls on materials. It would permit unrestricted buying of shortage commodities with no regard to DPA quotas or priorities. Unlimited buying of foreign copper could theoretically disrupt IMC copper allocations, but it's unlikely.

IMC allocations of primary copper for the first quarter of 1952 are about 400,000 net tons—if we can buy it. In the first quarter of 1951, U. S. industry consumed 340,005 tons (non-IMC).

**Would Abstain**—But don't believe that all copper consumers would take advantage of the right to enter world markets to bid any price for the metal. Some of the largest consumers, whose end products are composed chiefly of copper, want the price to come down to "equitable" levels.

The auto industry would welcome the chance to bid for copper, a fraction of its end product.

Whether IMC has sinister intent to verify Sen. Ferguson's charge of its being "the first step in a master plan to control and distribute the world's natural resources" remains to be proven.

IMC has shown no tendency to expand its allocations. It was originally empowered to allocate manganese and lead but has never done so.

# DECONTROL: No Timetable Changes

Washington still expects to retain steel controls until fourth quarter . . . But pressure is telling . . . Agencies told of priorities plan to replace CMP — By A. K. Rannels.

Top production control officials have not retreated from their timetable for decontrol.

As reported previously by THE IRON AGE, steel decontrol is to begin with fourth quarter 1952, and aluminum decontrol is to start in first quarter 1953.

Nevertheless, continued pressure for more decontrol action is having its effect. Orders have gone out to the government's operating levels to concentrate on getting ready for an "orderly" scrapping of the Controlled Materials Plan and its replacement with a priority system.

**Retain Some**—Present plans call for decontrol of most types of carbon steel beginning with the fourth quarter. Only heavy plate, bar, and seamless tubing will be retained under CMP, according to current planning.

Priorities, probably multi-band in nature, will be given to military and atomic energy orders to assure meeting of requirements.

Reason for delaying decontrol until the final months of the year: While military programs will take only about 20 pct of the steel, they will need about 40 pct of the available copper, and more than 50 pct of the aluminum, on the basis of present estimates.

"When civilian production has only 60 pct of the supply of copper and 50 pct of the aluminum available," controls chief Manly Fleischmann says, "it is plain to me that controls must remain in force to insure fair and equitable distribution to civilian users."

**Must Take Plunge**—He still holds to his belief that "premature" lifting of controls, even on materials apparently in good supply, would throw an overburden on others. But—even so—Fleischmann says the plunge must be

taken. In any event, it will be tough on small business for a month or two afterward.

Meanwhile, National Production Authority's "appraisement" of all orders is now in effect. Idea is to find out if the original order is still justified.

Their findings will pass through a coordinating procedure and a review by higher officials who will then submit recommendations as to abolition of the order or its consolidation with others.

**Cuts Orders**—Henry Fowler, head man at NPA, says that this process of reassessment has already reduced the number of orders or issuances from 350 to about 100. It has not brought any great measure of decontrol but reduces the ground to be covered for such action.

In screening the existing orders, industry divisions are to apply the following yardsticks:

1. How and to what extent are defense production and stockpiling affected by the order?

2. How and to what degree does the order help and encourage expansion (industrial)?



"Now that the market's softening, let's go see what this sheet, plate and strip looks like."

3. If the order were eliminated, could a scramble for materials which would disrupt equitable distribution be avoided?

4. Would priorities alone assure filling of defense requirements?

## Industry Controls This Week

**Automobiles**—Revocation of M-68 completes integration of passenger car production into CMP.

**CMP**—Amendment of CMP Reg. 4 permits users of controlled materials to receive them 15 days prior to the quarter for which the quotas are issued.

**Diamonds**—M-102 requires inventory reports on crushing bort, diamond powder or dust, and unreclaimed diamond material. Authorizes NPA allocations.

**Nickel**—New list subheaded D-III amends Sched. A, M-80 by adding products to the list of goods for which nickel-bearing stainless steel, high nickel alloy steel and nickel silver may be used.

**Sales**—Amend. 8, SR 29, GCPR includes additional regulations in the coverage of SR 29.

**Stainless Steel**—Dir. 9, CMP Reg. 1 converts to rated orders ACM orders for non-nickel bearing stainless outstanding when stainless was decontrolled.

## Freight Car Builders Seek Steel

Freight-car builders are not as optimistic as control officials about getting last-half 1952 output back to something near the programmed production of 10,000 units a month.

Contract builders maintain they have noticed little easing of the steel shortage. Last week, they told control officials bluntly that they can't get steel enough to wipe old orders, some of a year's standing, off their books.

They reported difficulty in placing CMP tickets with the mills. Told that there is premium steel available, the builders said that their customers won't stand for the added cost.

**Try to Help** — Production officials then said that if the industry



would submit complete data on uncashed tickets, something would be attempted in the way of finding relief.

Worst shortages, the builders say, are in the bar, plate and structurals categories. This is disrupting schedules and resulting in layoffs.

Meanwhile, pressure is being brought on Defense Production Administration to increase the presently proposed third-quarter goals by at least 4500 more units. Tentative plans by DPA are to allocate enough materials to permit production of 20,500 cars of all types.

### Boost Some Metals Allotments

Manufacturers of consumer durables are being given additional second quarter allotments of steel, copper, and aluminum in sufficient quantities to offset military purchases of such items.

This means that a manufacturer who has a defense order will be able to fill it without drawing on materials allocated to supply the civilian market. The action applies to a wide range of items from metal buttons to cooking stoves, from needles and pins to lawnmowers and home freezers.

In order to meet this program, National Production Authority has set aside for use of its Consumer Durables Goods Div. for this purpose the following over-all tonnages:

Carbon steel, 80,787 tons or 11 pct of the original allotment; alloy steel, 406 tons or 8 pct; brass mill, 3,831,000 lb or 14 pct; copper wire mill, 166,500 lb or 6 pct; copper foundry, 558,100 lb or 4 pct; and aluminum, 2,797,300 lb or 6 pct.

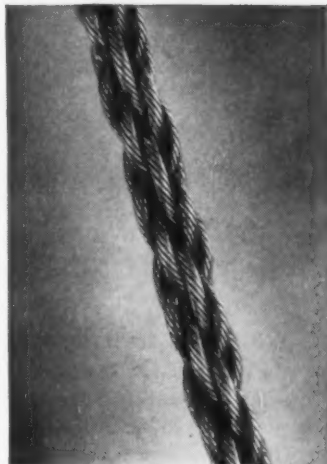
### Price Rises Asked for MRO Parts

Office of Price Stabilization is now receiving applications from some manufacturers of replacement parts (for items covered by Ceiling Price Reg. 22) for permission to determine Capehart adjustments provided by Supplementary Reg. 17 to CPR 22.

Firms that have determined ceil-



# Knot It! Kink It! ...IT WON'T HURT A Tuffy SLING!



Patent No. 2,454,417

### 11 Types of Tuffy Slings Available

There's a Tuffy Sling for *your* needs. If not, Union Wire Rope engineers will help work out special slings. Each one is proof-tested to twice its safe working load and the safe working load is stamped on metal tag attached to each sling. If you have your own rigging loft, Tuffy fabric is available by the reel.

### MAIL COUPON FOR YOUR FREE SLING

See for yourself that all the things we claim for Tuffy Slings are true. A free 3-foot sample is yours for the asking. Just mail the coupon and your Union fieldman will deliver yours to you.



### UNION WIRE ROPE CORPORATION

Specialists in Wire Rope, Braided Wire Fabric and High Carbon Wire  
2232 Manchester Ave. Kansas City, Mo.

Gentlemen: Please have my Union Wire Rope Fieldman deliver my free Tuffy sling sample.

NAME \_\_\_\_\_

FIRM NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

# SOUND WELDS

without preheat

NO UNDERBEAD CRACKING

## Use ARCOS Low Hydrogen Electrodes

ARCOS GRADE	A.W.S. SPEC.
Tensilend 70	E7016
Tensilend 100	E10016
Tensilend 120	E12015
Manganend 1M	E9016
Manganend 2M	E10016
Nickend 2	E8015
Chromend 1M	E8015
Chromend 2M	E9015

Today's demand for increased production makes underbead cracking more costly than ever before. It means valuable time, money, and man-hours lost in rewelding. And there's no need for it. Facts prove that underbead cracking has never been known to occur on welding high tensile steels with "properly designed" low hydrogen electrodes.

As a pioneer in this field, Arcos offers you the most complete line of Low Hydrogen Electrodes—ALL "properly designed"—and backed by the most rigid manufacturing controls in the industry. That's your assurance of consistently high quality weld metal for every job on high tensile steels. Arcos Corporation, 1500 South 50th Street • Philadelphia 43, Penna.

## WELD WITH

# ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes



## Controls

ing price adjustments under the Capehart Amendment for commodities covered by CPR 22, and who manufacture replacement parts for those commodities, now may apply to OPS for permission to determine similar Capehart adjustments for the replacement parts covered by other price regulations, rather than use the requirements of General Overriding Reg. 21.

The new procedure (Amdt. 1, GOR 21) will become effective on Mar. 29.

## Stainless Orders Keep Priority

Authorized controlled materials orders for non-nickel bearing stainless steel, outstanding when stainless became non-controlled, have been automatically converted to rated orders with the same allotment numbers which previously identified them.

This was established by amendment of Dir. 9 to CMP Reg. 1, in order to make sure that the preferential status of such orders as of Jan. 28 is retained.

Without the action, such orders would technically be unrated and superseded by new rated orders since that time.

A minor change in the directive continues the applicable provisions of M-1 to producers of stainless steel.

## Extend Receiving Time for Quotas

Restrictions were relaxed sufficiently last week to permit users of controlled materials to receive them from distributors 15 days prior to the quarter for which the allotment is issued.

This was brought about by amendment of Controlled Materials Plan Reg. 4. In effect, this gives the manufacturer 105 days for acquisition of materials instead of 90 days.

Another amendment permits the distributor to reject an Authorized Controlled Materials order if the buyer is "unwilling or unable" to meet the seller's "regularly established prices and terms" of sale or payment.

## Advance Civilian Quotas Planned

Looking ahead to partial de-control of carbon steel late this year, National Production Authority officials are presently planning to "allot controlled materials six months ahead" for most types of civilian hard goods.

This would be accomplished, they say, by sending out 100 pct advance fourth quarter allotments simultaneously with third quarter allotments.

All bets would be off—or such action postponed, at least—in the event a steel strike should occur.

Meanwhile, amendment of the consumer durables order (M-47B) is in the offing. Present plans are to make production "more flexible" by lumping the first three groups into one.

## More U. S. Mica Production Asked

Control officials have called upon the mica fabricating industry for recommendations for not only development of the domestic production program, but for developing a training program for splitters.

Shortages are threatened in high grade film mica, high grade block, and special sizes unless the domestic program now under development is stepped up in the Carolinas, Virginia, Georgia, South Dakota, and in New England.



"But we can't let him quit. He runs all the baseball pools in this department."

March 27, 1952

# SAFEGUARD

for quality



## Use ARCOS Stainless Electrodes

Dependable weld performance on stainless fabrication requires weld metal with the correct chemical composition. And you want to be sure that the electrodes you use will produce the same dependable results on job after job.

The Arcos quality controls give you this assurance with every lot of Stainless Electrodes you receive. From the chemical analysis of the raw materials, to the analysis of actual weld metal, every control test is applied to assure you chemically correct weld metal at all times. In your own plant that can mean improved welding performance . . . fewer rejects . . . lower weld costs.

New chart of typical weld metal analysis tells what Arcos electrodes deliver. Copy on request. Arcos Corporation • 1500 South 50th Street • Philadelphia 43, Penna.

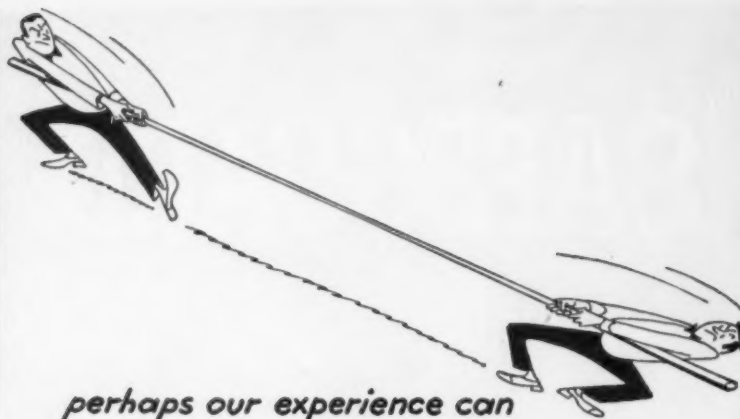
## WELD WITH

# ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes







perhaps our experience can

## STRETCH your alloy steel supplies!

You have doubtless heard about "bar-stretchers." Have you ever seen one? Wheelock, Lovejoy has several — any one of which can help you stretch your alloy steel supply so that you can keep up your production schedules during this period of unavoidable shortages. Having been in the steel business for over 100 years, our staff of metallurgists is in a unique position to help solve your difficulties. Our "bar-stretchers" include suggestions for substitute grades — alternate methods of manufacture — varying your present methods of treatment — and many more!

A letter or phone call to your nearest Wheelock, Lovejoy warehouse will bring an experienced man to help you stretch your alloy steel supply.

And he will be delighted to be of service! **SCRAP is worth money, and every pound turned in means more steel for you — so get in the SCRAP!**

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book, indicating your title and company identification. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.



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### Controls

#### Copper Subsidy Agreements Signed

In an attempt to increase the domestic copper supply, the government last week entered into two more subsidy agreements, making a total of three. Washington is prepared to pay up to 10¢ per lb over ceiling for up to 11,810,000 lb of prime lake copper.

One agreement was made last week between Defense Materials Procurement Agency and Copper Range Co., for up to 6,372,000 lb from the high cost Champion Mine in Michigan at 33.8¢ per lb.

There are a number of conditions in the contract. Term of the contract is less than 2 years, expiring Dec. 31, 1953. It may also be cancelled by either party on 60 days notice, and it ends automatically in the event price control is lifted.

Third subsidy agreement was signed later in the week when DMPA agreed to guarantee a price of 30.53¢ a lb for up to 5,438,000 lb from the Miser's Chest Mine in New Mexico over the next 2 years.

This property is owned by the Banner Mining Co., Arizona, and the price is based on refined electrolytic metal. It has been indicated that production of the high cost mine would have to shut down unless the subsidy was granted.

#### Accept New Locomotive Formula

Locomotive manufacturers last week agreed to a tentative formula for governing unit production as proposed by National Production Authority. The plan is expected to be okayed by Defense Production Administration.

Each builder is allotted the same percentage as his average ratio to total production for the 3 base years of 1948-1950:

Electromotive Div., General Motors, 51.4 pct; American Locomotive, 21.7; Baldwin-Lima-Hamilton, 11.9; General Electric, 7.8; Fairbanks Morse, 3.6; Whitcomb Locomotive Works, 2.4; Davenport-Besler, 1.1. Vulcan Iron Works and Plymouth Locomotive Works, which produced 7 and 5 locomotives respectively during the period are allotted about one-half of 1 pct each.

## Navy Ordnance Starts Road Show

Goal of a mobile exhibit sponsored by Navy Bureau of Ordnance, which is sending its traveling display on the road in April, is more small-business participation in Navy procurement programs in all 48 states.

A 14,000-mile swing through the nation is called for, with visits scheduled for the largest city in each state and all cities with more than 400,000 residents. The exhibit will make 5-day stops in the larger cities and 3-day stops in others.

Navy advisers, prepared to tell representatives of small firms how to get and complete procurement contracts, will man the touring display. Materials shown in the exhibit will be non-security ordnance items which can be produced by small companies.

## Small Business Gets Navy Orders

A growing rate of Navy prime-contract placements with small business concerns resulted during January in contracts valued at \$167,041,000 being placed with smaller firms.

According to the Navy, the approximately 50,000 purchase actions initiated with small companies represent about 67 pct of the defense work these companies can handle. This estimate takes into account only prime contracts and does not include the considerable amount of work small business is doing in subcontracting.

All Navy obligations for defense contracts in January totaled \$657,240,000.

Between July 1, 1951, and Jan. 31, 1952, Navy prime contracts with small business are reportedly valued at \$1,411,708,000.

## Electric Boat Co. Converts Subs

Three submarines will be converted to perform anti-sub missions for the Navy by the Electric Boat Co., Groton, Conn.

Submarines selected for conversion are the Angler (SS240), Cavalla (SS244), and Croaker (SS246). Formerly part of the Atlantic Reserve Fleet, these vessels will be given an "SSK" designation.

## Technical Service Data Sheet

### Subject: CHARACTERISTICS OF AND USES FOR RODINE®

#### A. SULFURIC ACID PICKLING

TYPE OF RODINE	POWDERED	POWDERED	POWDERED	LIQUID	LIQUID	LIQUID	LIQUID
FOAMING OR NON-FOAMING	FOAMING	NON-FOAMING	NON-FOAMING	FOAMING	NON-FOAMING	NON-FOAMING	NON-FOAMING
WITH WHAT ACID USED	SULFURIC ONLY	SULFURIC ONLY	SULFURIC ONLY	SULFURIC OR MURIATIC MIXTURES (MIXED) WEAK INTERIC	SULFURIC MURIATIC	SULFURIC PHOSPHORIC HYDROFLUORIC	SULFURIC ONLY
WITH WHAT STRENGTH ACID	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH
TEMPERATURE LIMITATIONS	ANY PICKLING TEMPERATURE	ANY PICKLING TEMPERATURE	ANY PICKLING TEMPERATURE	PREFERABLY NOT OVER 150° F	ANY PICKLING TEMPERATURE	ANY PICKLING TEMPERATURE	ANY PICKLING TEMPERATURE
SOLUBILITY	PARTLY SOLUBLE	PARTLY SOLUBLE	PARTLY SOLUBLE	SOLUBLE	READILY DISPERSED	SOLUBLE	READILY DISPERSED
BEST SUITED TO TYPE OF STEEL	UNREACTIVE STEELS	UNREACTIVE STEELS	UNREACTIVE STEELS	UNREACTIVE STEELS	REACTIVE STEELS	ANY TYPE STEEL	REACTIVE STEELS
OUTSTANDING USES	FAST PICKLING	FAST PICKLING	FAST OR SLOW PICKLING	FAST PICKLING	USED WITH SALT	PICKLING FOR PLATING	USED WITH SALT
USUAL PROPORTION FOR PICKLING	30% TO 50% S.P. OF SULFURIC ACID	30% TO 50% S.P. OF SULFURIC ACID	30% TO 50% S.P. OF SULFURIC ACID	1/2 TO 1% S.P. OF SULFURIC ACID	1/2 TO 1% S.P. OF SULFURIC ACID	1/2 TO 1% S.P. OF SULFURIC ACID	1/2 TO 1% S.P. OF SULFURIC ACID
MISCELLANEOUS COMMENTS	WHEN ADDED CONTINUOUSLY AS IN A THIN SLURRY OF DILUTE SULFURIC ACID	WHEN ADDED CONTINUOUSLY AS IN A THIN SLURRY OF DILUTE SULFURIC ACID	ADD IN A SLURRY OF WATER OR ADD DIRECT TO BATH AFTER IT REACHES PICKLING TEMPERATURE	FORMS A HEAVY FOAM BLANKET	ADD DIRECT TO BATH AFTER IT REACHES PICKLING TEMPERATURE	CAN BE ADDED TO WARM OR COOL PICKLE BATHS	ADD TO BATH AFTER IT REACHES PICKLING TEMPERATURE
EFFECTIVENESS COMPARED WITH OTHER RODINES	MEDIUM	MEDIUM	STRONG	MEDIUM	STRONG	MEDIUM	STRONG

#### B. MURIATIC ACID PICKLING

TYPE OF RODINE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
FOAMING OR NON-FOAMING	FOAMING	NON-FOAMING TO SEMI-FOAMING	NON-FOAMING	NON-FOAMING TO SEMI-FOAMING	NON-FOAMING
WITH WHAT ACID USED	MURIATIC AND SULFURIC MIXTURES CONTAINING WEAK INTERIC	MURIATIC	MURIATIC	MURIATIC	MURIATIC
WITH WHAT STRENGTH ACID	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	ANY PICKLING STRENGTH	30% TO UNDILUTED	30% TO UNDILUTED
TEMPERATURE LIMITATIONS	ANY PICKLING TEMPERATURE	COLD OR HOT GOOD IN HOT BATHS	LESS THAN 150° FAHR	FROM 150° FAHR UP	LESS THAN 150° FAHR
SOLUBILITY	FAIR	GOOD	GOOD	GOOD	GOOD
BEST SUITED TO TYPE OF STEEL	ANY	ANY	ANY	ANY	ANY
OUTSTANDING USES	WHERE A FOAM IS REQUIRED ON MURIATIC ACID BATHS	PICKLING REMOVING LINE SCALE FROM EQUIPMENT IN WEAK MURIATIC SOLUTION	PICKLING IN WARM WEAK MURIATIC ACID PICKLING FOR PLATING	CLEANING OIL WELLS OR EQUIPMENT IN STRONG HEATED SOLUTIONS	CLEANING IN COOL STRONG MURIATIC SOLUTIONS
USUAL PROPORTION FOR PICKLING	1/2 TO 1/2% S.V. COMMERCIAL MURIATIC ACID	1/2 TO 1/2% FOR PICKLING 3 TO 5% FOR CLEANING EQUIPMENT	1/2 TO 1/2% FOR PICKLING	1/2 TO 3% S.V. COMMERCIAL MURIATIC ACID	2 TO 5% S.V. COMMERCIAL MURIATIC ACID
MISCELLANEOUS COMMENTS	OTHER GRADES BETTER FOR CLEANING EQUIPMENT	CAN BE ADDED TO UNDILUTED MURIATIC ACID TO BE DILUTED	CAN BE ADDED TO UNDILUTED MURIATIC ACID TO BE DILUTED	WILL PLATE COPPER ON WORK IF USED IN WEAKER MURIATIC SOLUTIONS	WILL PLATE COPPER ON WORK IF USED IN WEAKER MURIATIC SOLUTIONS
EFFECTIVENESS COMPARED WITH OTHER RODINES	MEDIUM	MEDIUM	MEDIUM	STRONG	STRONG

#### C. SPECIAL APPLICATIONS

"Rodine" is effective in pickling iron-nickel alloys and alloys containing both nickel and cobalt, in muriatic acid, or in sulfuric acid containing 1% to 2% of muriatic acid. It is also used in the pickling of white metals, alloys of copper, nickel, etc. Special grades of "Rodine" are available for the spray pickling of magnesium sheets in sulfuric acid.



WRITE FOR DESCRIPTIVE FOLDER ON "RODINE" AND INFORMATION ON YOUR OWN PICKLING PROBLEM.



it's easier

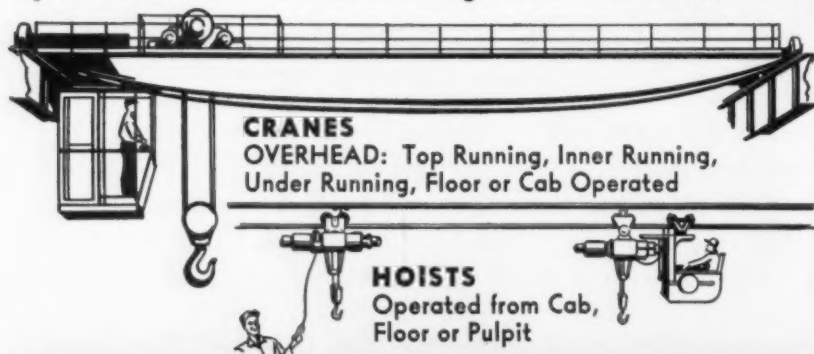
FROM THE AIR



● Want to spot loads more accurately — stack them higher? Then put this Shepard Niles Crane to work! From his vantage point, the operator can see where loads should go, then deliver them there directly.

● Little wonder so many plants use through-the-air handling — it's so fast, so easy, so economical. But which crane is best for your plant? The Shepard Niles representative is qualified to answer this question because he specializes in through-the-air handling. He knows the importance of installing the right equipment from the start. Write for Bulletin 180 today — and ask to have a representative stop by your office.

**Specialists in loads through-the-air since 1903**



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CRANE AND HOIST CORPORATION

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## —Defense Contracts

### Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal, and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

**Letterkenny Ordnance Depot, Chambersburg, Pa.**  
Body parts for trucks, 101 items, 52-95B, Apr. 2.

**Springfield Armory, Springfield, Mass.**  
Cylinder, gas, 280000 ea., 52-205B, Mar. 25.  
Plate, butt, assy, 196000 ea., 52-205B, Mar. 25.  
Lock, gas cylinder, 160000 ea., 52-205B, Mar. 25.  
**Corps of Engineers, Chicago.**  
Tractor drawn mower, 26 ea., A-245B, Mar. 4.

**Ordnance Tank Automotive Center, Detroit.**  
Lever, hand brake, 1100, 52-2392B, Apr. 10.  
Spring, steering tie rod, 100000, 52-2392B, Apr. 10.  
Bolt, U-spring to axle housing, 45000, 52-2392B, Apr. 10.  
Pipe fuel tank filler, 1500, 52-2393B, Apr. 10.  
Nut stamped standard type B, 2100000, 52-2464B, Apr. 4.  
Strap, mounting, 2100, 52-1013B, Apr. 10.  
Pump, gasoline refueling, 100, 52-794B, Apr. 10.  
Retainer, trans gear shift, 10000, 52-2413B, Apr. 10.  
Body, trailer complete assy, 250, 52-2359B, Apr. 10.  
Filler, hyd brake, 13000, 52-2588B, Apr. 11.  
Lever, gear shift, 1000, 52-2489B, Apr. 11.  
Key, accessory drive shaft, 1900, 52-444B, Apr. 11.  
Brush set, starter, 15000, 52-3521B, Apr. 11.  
Clutch drive assy, 13000, 52-2521B, Apr. 11.  
Gear, sliding trans, 2000, 52-2490B, Apr. 11.  
Gear, power take off, 1500, 52-2490B, Apr. 11.  
Disk, trans brakes & clutch, 2500, 52-2390B, Apr. 9.  
Step, cargo body tail gate, 19100, 52-1633B, Apr. 9.  
Cleaner, air w/mounting brkt, 15000, 52-1977B, Mar. 27.  
Shaft, main drive w/gear, 13750, 52-1652B, Apr. 24.  
Kit, repair shaft cam, 1000, 52-242B, Apr. 9.  
Fitting, air compressor, 2750, 52-2422B, Apr. 9.  
Coupling, pipe reducing, 13500, 52-2261B, Apr. 9.  
Bend, pipe return, 2500, 52-2261B, Apr. 9.  
Washer, lock tooth type, 1860000, 52-2396B, Apr. 4.  
Joint, universal frt mounting, 1500, 52-2436B, Apr. 10.  
Nut, safety, 1860000, 52-2465B, Apr. 5.

**Naval Purchasing Office, Washington.**  
Screwdrivers, jewelers electricians, 81600, 5995B, Apr. 1.  
Jacks, automotive ratchet hydraulic, 8700, 3871Q, Apr. 1.  
Motor for feed pump, 70, 49913-B, Apr. 10.  
Generator, starter motor, 160, 49973-B, Apr. 15.  
Cabinet, stowage, aluminum, 11485, 49848-B, Apr. 10.  
Furnace, carburizing ultriding, 9, 5982B, Apr. 1.

**Procurement Section, Washington.**  
Diving apparatus, 85 ea., 870B, Apr. 8.  
Spare parts for gull grader, 121 items, 908B, Apr. 8.

**Watervliet Arsenal, Procurement, Watervliet, New York.**  
Steel tool unlocking part, 14000 ea., 52-127B, Apr. 11.  
Steel springs, spare parts, 82400 ea., 52-127B, Apr. 11.

**Business Service Center, Washington.**  
Pumps, cent. a/stage, 205 ea., 4D-8552B, Apr. 4.

**Marietta Transportation Corps. Depot, Marietta, Penna.**  
Locomotive, diesel, 8 ea., 58B, Apr. 10.  
Railway car, flat, 204 ea., R52022TCQ, Mar. 25.  
Railway car, tank, 386 ea., R52-59TCQ, Mar. 28.



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## for the BASIC METAL WORKING INDUSTRIES

# ATLAS CARS

The outstanding feature of Atlas power-operated cars is their ability to perform with utmost efficiency and economy in your operations. This is because each car produced by Atlas is engineered to the specific needs of the customer.

### CENTER DUMP FURNACE CHARGING CAR

The discharge gates are arranged so that the charge may be spread to the best advantage over the width of the furnace. Gates are hydraulically operated through a hand pump. Car is mounted on anti-friction roller bearings with spring-mounted journals and is provided with automatic engine couplers.

### CUPOLA CHARGING SCALE CAR

Car has ball bearing steel turntable on top of the car upon which charging buggies are placed and weighed. Car has anti-friction bearings at main journals.



YOU CAN RELY ON ATLAS FOR  
DEPENDABLE HAULAGE EQUIPMENT



## THE ATLAS CAR & MFG. CO.

ENGINEERS

MANUFACTURERS

1140 IVANHOE RD.

CLEVELAND 10, OHIO, U. S. A.

Corps. of Engineers, Philadelphia.  
Tank, steel, water, 3, ENG-36-100-52-236B,  
Mar. 20.  
Mast, telescopic, 6 to 19 ft port., 1066, ENG-  
36-100 NEG-52-236Q, Mar. 20.  
Crank handle steel, 1066, ENG-36-100 NEG-52-  
239Q, Mar. 21.

U. S. Atomic Energy Commission, Idaho Falls,  
Idaho.  
Machine shop supplies, 45 ft, 2179, Mar. 25.

Quartermaster Purchasing Div., Chicago.  
Bucket, fire, iron, 11700 ea., 52-1157B, Mar. 31.  
Laundry & dry cleaning equip., var, 52-1167B,  
Apr. 1.

Air Materiel Command, Dayton.  
Bracket assy, gun trunnion, 9673 ea., 52-659B,  
Apr. 1.  
Shackle, bomb, 5000 ea., 52-707B, Mar. 31.

### Contracts Reported Last Week

Including description, quantity,  
dollar value, contractor and ad-  
dress:

Distillation unit, diesel, 6, \$116,830, Mechan-  
ical Equip. Co., Inc., New Orleans.

Tank, steel vert. gas 1,000 bbl, 10, \$28,798,  
Black, Sivalls & Bryson, Inc., Kansas City.

Brush, generator, 1050 ea., \$259,313, Bendix  
Aviation Corp., Teterboro, N. J.

Spare parts for materials handling equip.,  
\$40,000, Clark Equipment Co., Battle Creek,  
Mich.

Kit, aircraft conversion, 1200 ea., \$75,024,  
Bendix Aviation Corp., Teterboro, N. J.

Pumps for aircraft, exceeds \$250,000, Thomp-  
son Products, Inc., Cleveland.

Instruments, for aircraft, var, \$67,549, Avia-  
tion Eng. Corp., Woodside, N. Y.

Engine spares, 6074 ea., \$103,053, United  
Aircraft Corp., East Hartford, Conn.

Propeller spare parts, 120780 ea., \$212,464,  
United Aircraft Corp., East Hartford, Conn.

Misc. parts & assys, exceeds \$250,000 United  
Aircraft Corp., East Hartford, Conn.

Mounts, tripod, M74 & parts, exceeds \$250,-  
000, Evans Products Co., Plymouth, Mich.

Machine assy, exceeds \$250,000, Quality Hard-  
ware & Machine Co., Chicago.

Steel, cartridge clip, \$145,326, Wallace  
Barnes Co., Associated Spring Corp., Bristol,  
Conn.

Extension, 25000, \$111,750, General Slicing  
Machine, Walden, N. Y.

Parts for pistol, \$113,990, Colt's Mfg. Co.,  
Hartford.

Trucks, fork lift, 64, \$187,279, Yale & Towne  
Mfg. Co., Chicago.

Tool sets, exceeds \$250,000 Century Tool Co.,  
Palmyra, N. J.

Files, carbon, steel, 11880 sets, \$26,730, C. &  
E. Marshall Co., Chicago.

Combat vehicle parts exceeds \$250,000, The  
Willys-Overland Motors, Inc., Toledo.

Accessories, tools & equip, 12.3 sets, \$120,-  
416, The Firestone Tire & Rubber Co., Akron,  
Ohio.

Container, exceeds \$250,000, W. C. Ritchie &  
Co., Chicago.

Shell, 90mm, exceeds \$250,000, U. S. Steel  
Co., Pittsburgh.

Head for 3.5 in. rocket, exceeds \$250,000,  
U. S. Steel Co., Pittsburgh.

Attachments, bullet, 64 ea., \$221,760, Emhart  
Mfg. Co., Portland, Conn.

Machine, gauge & weight, 165 ea., exceeds  
\$250,000, The Waterbury Farrel Foundry &  
Machine Co., Waterbury, Conn.

Case, cartridge, 105MM, exceeds \$250,000,  
Fedders-Quigan Corp., Buffalo.

Propeller spare parts, 68394 ea., \$100,000,  
United Aircraft Corp., East Hartford, Conn.

Replenishment of tools, 10200 ea., \$36,700,  
Clark Cable Corp., Cleveland.

Replenishment of vehicle parts, 15350 ea.,  
\$49,120, The Crescent Co., Pawtucket, R. I.

Parts for grenade launcher, exceeds \$250,000,  
Sun Ray Photo Co., Inc., New York.

Locomotive, diesel, 41 ea., exceeds \$250,000,  
Baldwin-Lima-Hamilton Corp., Philadelphia.

Vertical boring machine, 2, \$105,510, Ameri-  
can Steel Foundries, Cincinnati.

March 27, 1952

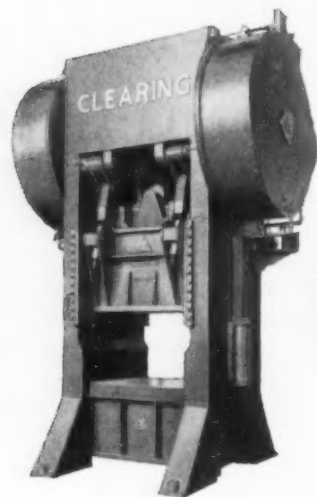


What  
Mrs. Updyke  
doesn't  
know she knows

This housewife never saw a metal forming press, and "stamping" to her is what you do to letters or with your feet. But when it comes to buying metal articles—appliances, pans, or what have you—Mrs. Updyke almost invariably picks the ones that are press manufactured.

She doesn't know why, isn't even aware that she's showing a preference for a certain kind of manufacturing. But she likes the smooth surfaces and flowing lines that mark the press-made article. She likes the lighter weight. Being a woman, she likes the prices that up-to-date press methods make possible.

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## Construction

### Steel Inquiries and Awards

Fabricated Steel Awards this week include the following:

1600 Tons, Steelton, Pa., 3,000,000 cu. ft. gas holder for Harrisburg Gas Co., to Bethlehem Steel Co., Bethlehem.

1450 Tons, Dauphin County, Pa., highway bridges, Route LR 139, for Pennsylvania Dept. of Highways, to Bethlehem Steel Co., Bethlehem.

600 Tons, Roanoke, Va., power house for American Viscose Co., to Bethlehem Steel Co., Bethlehem.

100 Tons, Schuylkill County, Pa., highway bridge, Route LR 290, for Pennsylvania Dept. of Highways, to Bethlehem Steel Co., Bethlehem.

Fabricated Steel Inquiries this week include the following:

950 Tons, Hastings, Neb., U. S. Government buildings, bids due Apr. 1.

680 Tons, Lehigh County, Pa., divided highway, two I-beam bridges, Pa. Department of Highways, Harrisburg, Pennsylvania. Bids to Apr. 18, 1952.

203 Tons, Manchester and Wenham, Mass., single span steel stringer bridge, Charles A. Fritz, Beverly district engineer. Completion date Oct. 1, 1953.

200 Tons, Nitro, W. Va., extension of boiler house for American Viscose Co., bids due Mar. 28.

Reinforcing Bar Inquiries this week include the following:

324 Tons, Stockbridge and West Stockbridge, Mass., bituminous concrete and 4 double span concrete bridges, William J. Goggins, Pittsfield district engineer. Completion date Aug. 1, 1953.

144 Tons, Lehigh County, Pa., divided highway, two I-beam bridges, Pa. Department of Highways, Harrisburg, Pennsylvania. Bids to Apr. 18, 1952.

131 Tons, Manchester and Wenham, Mass., single span stringer bridge, Charles A. Fritz, Beverly district engineer. Completion date Oct. 1, 1952.

### Cement Tax Write-Offs Planned

Defense Production Administration officials said last week that they planned to approve tax amortization certificates for expanding production of cement by 6,500,000 bbl.

This would bring the nation's total capacity to more than 267,500,000 bbl by the end of 1953, the agency figured.

Expansions are to be approved on this area basis: New England, the Carolinas, and Wisconsin-Minnesota, 1,000,000 bbl each; 1,500,000 bbl for the Oregon-Idaho area; and 2,000,000 bbl for the Gulf area of Mississippi-Louisiana-Oklahoma-Texas.

### Aluminum Imports Gain Backing

**Congressional approval of increased purchases of Canadian aluminum is growing . . . Defense agencies push plan for security . . . OPS takes decontrol steps — By G. H. Baker.**

Proposals to step up imports of aluminum from Canada are gaining support from increasing numbers of congressmen (see p. 154).

Defense mobilizers are pushing for approval of the 300,000-ton-a-year import plan on the grounds that national defense needs, including stockpile demands, require it. Meanwhile, Defense Production Administration has asked domestic aluminum fabricators to submit in writing their opinions as to whether or not presently-planned expansion and potential production will be sufficient to meet all requirements.

Fabricators, although opinion among them still is mixed, generally regard the plan as a form of guarantee against loss of supplies during the coming push in the rearmament drive. But industry and government officials are agreed that the discovery of new uses for aluminum during the next few years may quickly and effectively upset the current balance between supply and demand.

**Needs Doubtful**—While it is conceded that the present market situation is now favorable for all types of consumers (assuming that the government soon will take a more realistic view in the issuance of aluminum CMP tickets) a definite feeling of unrest and uneasiness as to the form and size of future military demand persists among all planning agencies concerned.

Sam Anderson, Washington's aluminum "czar," believes that national security requires a stockpile of at least 4 million tons of aluminum by 1960. This goal envisages not only the adoption of the proposed Canadian import program,

but also the immediate execution of the proposed "third round" of domestic expansion—a program designed to increase U. S. capacity by about 140,000 tons.

Feeling at the capitol, however, is that the domestic expansion pro-

#### Is He Quitting?

Washington rumors have it that Manly Fleischmann's resignation already is on the desk of President Truman, to take effect about July 1.

While last week there was no confirmation of this report, Mr. Fleischmann told *THE IRON AGE* that he "still hopes to be able to leave sometime in June."

gram can safely be shelved temporarily in favor of the Canadian imports.

**Decontrol**—Office of Price Stabilization is reluctantly getting ready to take the first steps leading toward decontrol.

Ellis Arnall, OPS chief, has directed his staff to prepare the necessary paperwork involved in suspension of price controls from such products as hides, wool, tallow, bur-lap, and edible fats and oils.

There are no plans at present for removal of price controls from any metals or foods. Arnall sums up the government's position on these commodity groups this way: "As a practical matter, we can't afford to demobilize our armor against inflation now."

**Shipbuilding**—Navy's new ship-construction program, now await-

ing final congressional approval, is scheduled for distribution among the shipyards on both East and West coasts.

Senate and House committees studying the proposed \$1,144,-883,000 program decided to withdraw legislative orders to "spread the work around" when top Navy brass promised to do so on its own initiative.

West Coast congressmen have long demanded that contracts for larger ships be let to western yards. Contracts for ships too large to pass through the Panama Canal are most eagerly sought.

Present plans call for construction of a second super aircraft carrier, and a second atomic-powered submarine. In all, construction of 554 new ships and conversion of ten others is proposed.

A total of 119 ships is now under construction on the East Coast, as compared with 106 on the West Coast. Tonnage-wise, however, West Coast yards have only a little more than half of the existing contracts.

**Grass Roots**—Charles Sawyer, the government's top liaison man for the many problems of business and industry, is headed for a "grass-roots" swing around the country. Among other things, he wants to know:

Are controls being properly and fairly administered?

Is decontrol long overdue, as some industries claim, or is the present soft-market condition in metals just a temporary lull preceding another big military build-up?

Is the paperwork connected with current controls over materials, prices, wages, and profits as simple as it could be?

Sawyer hopes to obtain the answers to these and other questions connected with the defense program in a 2-week swing around the country which begins in Detroit on Apr. 7.



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## OUTPUT: Planners to List Facilities

**SDPA survey designed to provide more defense work for small business . . . Compilation will help procurement officials determine available capacity . . . Standard code to be set up.**

Industrial plant information that will go into a new government list of U. S. productive facilities, being compiled to encourage more small business participation in defense work, will answer the following questions:

Does the plant have facilities and equipment for making all or parts of specific end-items?

Do plant personnel have the technical knowledge and skill required to produce these items?

Has the firm financial capacity that will permit contract performance?

Can the plant meet price and delivery requirements?

Small Defense Plants Administration, which developed the inventory plan with cooperation from the military departments and other agencies, says the survey is designed to make it easier for procurement officers to learn about a greater number of potential suppliers.

**Questionnaire**—First element of the facilities inventory is development of a standard questionnaire form. This would be expected to provide for listing of basic information desired by all federal procurement personnel.

Next, state governments will be asked to cooperate by modifying current facilities files and procedures to fit the new plan, and to arrange to have files kept up-to-date.

SDPA is working out a standard "industry and equipment" code as a basis for state government filing systems. The code is intended also as an index for use by procurement officers.

In addition, SDPA regional offices would be used as liaison and exchange centers to aid Federal procurement officials and state governments. They would offer similar benefits to prime con-

tractors who wish to subcontract some operations.

The industrial facilities list would be used by procurement officers to translate buying schedules into standard industry and equipment codes. These officials' requests for facilities data would be forwarded to one or more SDPA field offices.

Then field offices would work with state government personnel in compiling lists of potential producers. Finished lists would serve as immediate aids to procurement officials in developing bid lists on specific purchase items.

### New Group to Speed Tool Output

Office of Defense Mobilizer Charles E. Wilson is setting up a machine tool commission to get faster production on essential tools, Clay P. Bedford, special assistant to Defense Secretary Lovett, told a Senate small business subcommittee last week.

About 27 operations are on the

commission's agenda, but Mr. Bedford couldn't reveal the actual steps planned to improve the machine tool situation. Additional personnel will be assigned to review tool orders. Emphasis will be put on tools with a "must" classification.

Priority systems will be set up. Some preliminary steps are now in progress, but it will take another month to institute a general screen-priority system. Mr. Bedford believes it will be an improvement over the E-1-b system. He said Defense Electric Power Administration must be consulted when assigning priorities to insure enough power to build the needed tools. National Production Authority's Industry Div. will administer the new system, which applies only to machine tools and other heavy industrial equipment. (See p. 83)

After testifying, Mr. Bedford told THE IRON AGE that stockpiling (he prefers "reserve") will be one of the 27 operations mentioned. He reported that industry has promised to send volunteer workers to help get the program going.

He refused to confirm recent reports that the Air Force is \$4 billion behind in orders, but admitted machine tools are part of that service's problem.



**PLANNERS:** CIO President Phillip Murray (center) huddles with David J. McDonald, secretary and treasurer, USW (left), and James G. Timmes, vice-president, USW, to discuss the current steel industry wage dispute.

# Industrial Briefs

**Half Century Mark**—An era of great industrial expansion in the U. S. is being highlighted this month in observance of the fiftieth anniversary of STEEL FOUNDERS' SOCIETY OF AMERICA. The society, which grew out of the informal luncheon meetings of a small group of steel casting pioneers, is the only national trade organization representing exclusively producers of carbon and low alloy steel castings.

**Tungsten Smelting** — Through its Macro exploration division, KENNA-METAL, INC., Latrobe, Pa., will begin construction this spring of an ore dressing and electric smelting works at Port Coquitlam, British Columbia. Tungsten ores will be smelted, and scheelite, hubnerite, and wolframite will be bought for refining into tungsten carbide.

**Seamless Tube Mill**—COPPERWELD STEEL CO., has received a certificate of necessity for fast tax writeoff of 50 pct of \$15,266,115 to be spent for new facilities to produce seamless tubing at its Warren, Ohio, plant. The company, which has been producing tube rounds at Warren, plans to expand its operations to the finished product.

**Molecular Bonding** — ALUMINUM CO. OF AMERICA and BOHN ALUMINUM & BRASS CORP., have been licensed to use the patented Al-Fin process for the molecular bonding of aluminum to iron or steel. The process, developed by Al-Fin Div., Fairchild Engine & Airplane Corp., greatly widens aluminum's field of usefulness.

**Molding Machine**—One of the chief features at MONSANTO CHEMICAL CO.'s exhibit in the International Foundry Show, Atlantic City, May 1-7, will be demonstrations of the revolutionary shell molding process with an automatic shell molding machine. Using the Resinox phenolic resin and sand, the machine will turn out 45 shells per hr.

**New Plant**—JANETTE MFG. CO., Chicago, has started operation in its new plant. The new plant was built at a cost of about \$1,500,000 and provides 100,000 sq ft of floor space.

**New Address** — JAYDEE SHEET METAL MFG. CO., Los Angeles, producers of stainless steel equipment for restaurants and institutional use, has moved to a new building at 1550 W. 132 St. The company has introduced a line of mobile food dispensing carts for food serving in defense plants.

**Final Stages**—Installation of machinery and equipment has been started in RHEEM MFG. COMPANY's new \$1,500,000 steel shipping container plant on Route 25, Linden, N. J. The building, which contains approximately 150,000 sq ft of manufacturing and office space, will house the largest metal lithographing press ever to be turned out by R. Hoe & Co., Inc.

**To Establish Plant**—A new factory building with 73,000-ft floor space has been leased to HOLMAN MACHINES LTD., subsidiary of a British firm making pneumatic air tools used in construction and mining. The parent company has plants in England, South Africa, Australia and South America.

**Headquarters Transferred** — George A. Gade, manager of outside sales for the STANDARD PRESSED STEEL CO., Jenkintown, Pa., has transferred his headquarters from Detroit to the plant in Jenkintown, Pa.



**Name Changed**—Kropp Forge Co., Chicago, has changed the name of its wholly-owned subsidiary, A. C. Woods & Co., Rockford, Ill., to KROPP STEEL CO. The subsidiary is engaged in the steel fabricating and weldment business.

**To Confine Production**—KOPPERS CO. INC., Pittsburgh, has made a change in operations at its piston ring plant, which formerly produced automotive rings. In view of the expanding production of aircraft, operations will be confined to production of industrial rings. In addition to providing facilities for the expanding production, space will also be released to expand operations of Koppers nearby Bartlett Hayward plant, which has accepted additional defense orders.

**Opens Office**—A district sales office in suburban Philadelphia has been opened by NIAGARA MACHINE & TOOL WORKS, Buffalo, at 50 E. Wynnewood Road, Wynnewood, Pa. Mr. Joseph J. Ortalli has been appointed district manager.

**Building Started**—A new \$2 million plant is being erected by Frid Construction Co., Ltd., for CANADA IRON FOUNDRIES LTD., at the corner of Burlington St. and Kenilworth Ave., Hamilton, Ont. The new unit, which will be completed towards the end of this year, will produce ingot molds and stools for the steel industry, and will have a capacity of 400 tons per day.

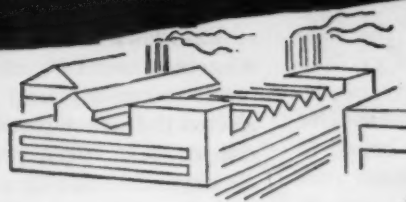
**Canadian Market** — Electronic components marketed by Centralab, a division of Globe-Union, Inc., will be manufactured for the Canadian market by GLOBE-UNION CANADA, LTD., a wholly-owned subsidiary. Plant facilities have been leased at 635 Queen St. E., Toronto. The new plant, which will go into operation in the latter part of March, will be under the management of Joseph Cummings, formerly manager of the Fort Dodge, Iowa, plant.

**New Division**—KRAFT CHEMICAL CO., Chicago, has formed a new division, Kaynide Div., to serve the metal finishing industry.



# EFFECTIVE PENSIONS

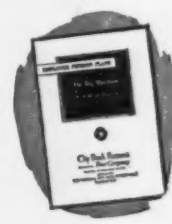
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# The Automotive Assembly Line

## Detroit Braces for Steel Strike

**Industry will be hard hit if USW goes out . . . Assembly lines would be forced to stop in 30 days, making thousands jobless . . . End of steel decontrol hopes—By R. D. Raddant.**

Already reeling from the one-two punch of cutbacks of civilian production and a scarcity of defense contracts, the automotive industry covered up and hoped to avoid a knockout from the threatened steel strike — if it comes (see p. 53).

Though as realistic as any fight manager in accepting the ups and downs of the industry, automotive management couldn't follow through and say "he can't hurt us." The industry would be hurt all along the line.

The strike threat was, in fact, double edged. If it materialized, it would be only a point of time before the assembly line slowed, then stopped, sending more thousands of auto workers onto the streets to add to the 100,000 already unemployed in Detroit.

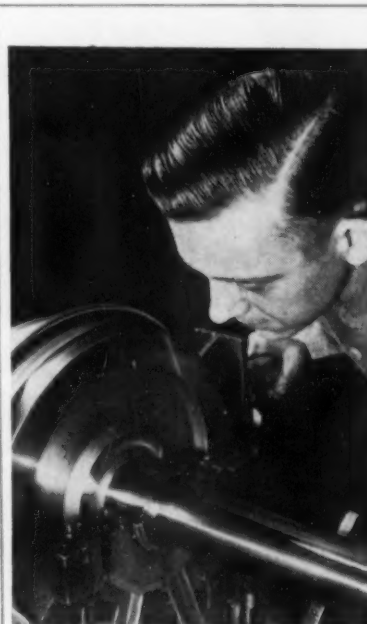
**Dead Hope**—It would also be the end to hopes for decontrol. Strict controls of steel to send material to defense industries were promised well in advance of the strike deadline.

While auto companies were permitted a 45-day steel supply under National Production Authority, inventory regulations, shortages of special types would be felt almost immediately with the stoppage of steel. Carbon bars, 1 to 3 in., were already in very short supply as were forging billets. Use of forging billets for shell casings kept their supply low and in many cases they were supplied by conversion.

No one hoped for any large stocks held by vendors and it was expected that first effects of a strike would be felt through suppliers.

**Shutdown**—However, production men could be expected to tax their ingenuity and it was predicted that most plants could keep up at least token production for 30 days although layoffs would begin shortly if last minute attempts at settlement failed.

Everyone in the industry felt that a steel strike would be particularly damaging in view of hard-fought production battles early this year. After a very bad start, the industry rallied to get substantial quota boosts for the second quarter and hoped to gain larger production rates in the last half of the year.



**BALANCE:** At Chrysler's Highland Park Plant this dynetric balancing machine emits delicate electrical impulses to find the most minute vibration in torque converters for fluid drive units. The operator looks on, his eyesight aided by stroboscopic light. Unbalance is corrected on the spot by welding on metal.

If the auto manufacturers were pessimistic about a settlement, it was only the reflection of the attitude of their steel suppliers, most of whom were convinced that a strike was inevitable, even though postponed.

**Best Off**—Of all the automobile companies, Ford had the fewest worries. Employees of the Ford steel mill at River Rouge, with its ten openhearth and five electric furnaces, are not members of the United Steel Workers but of the United Automobile Workers (CIO). They stayed on the job in previous steel strikes.

About 20,000 steel workers in Detroit sat on edge during the wage talks. Most of them are employees of the Great Lakes Steel Corp.

**New Tools**—Strides that have been made and are still to be made in broadening the concept of automation to auto production were illustrated graphically at the American Society of Tool Engineers meeting last week in Chicago.

Automation is probably more highly developed in automobiles than in any other industry with incredibly fast assembly line techniques being adapted to all departments from (1) feeding into presses, (2) moving parts through machines to (3) inspecting the finished product. Increased automation provides the last open frontier for cost cutting and speeding up production. The automation technique represents the best remaining opportunity for eliminating waste effort and material.

**Press Feeder**—A good example is the Feedomatic punch press feeder produced by the V & O Press Co. of Hudson, N. Y. and shown at the ASTE show. This equipment is used for a secondary feeding operation where a partly finished stamping of odd shape

and size would cause time-consuming complications and delays. This feeder eliminates the time loss of fitting an awkward metal shape onto the die. It also eliminates the danger of the operator coming directly in contact with the punch.

Other examples shown at Chicago included progressive dies which combined blanking, punching, and mounting nuts singly or two at a time in a single press. Complex gages which performed as high as 28 electronic measurements simultaneously and sorting by size were also shown.

**Symptoms**—With Detroit a predominantly automotive city, the condition of that industry is immediately felt throughout the metropolitan area. Its illnesses are the city's illnesses and its prosperities are the city's prosperities.

This is evident today in the indices of retail sales of department stores which show that Detroit is sagging well below sister cities of the midwest in retail business. This is, of course, caused by the enforced slump of the auto industry due to defense cutbacks.

**Poor Showing**—For example, January retail sales in Detroit were down 16.3 pct from January, 1951 against comparative slumps at 9.9 pct in Chicago, 10.2 in Indianapolis, and 9.7 in Milwaukee.

The fact that job prospects appear gloomy for some time to come in Detroit is more apparent in the rates of installment buying which reflect clearly the average man's confidence, or lack of it, in maintaining a regular income for a period of time.

Installment buying in Detroit for January showed a collapse of 40.3 pct from the previous year while credit buying in Chicago slipped only 1.1 pct; installment buying dropped 14.1 pct in Indianapolis and 1.9 pct in Milwaukee.

## KirkSITE:

**Ford uses alloy to make pilot models, eliminating hand working.**

KirkSITE, a soft metal, zinc-based alloy, was adapted for use by Ford Motor Co. engineers in producing full-size pilot models for 1952 Ford cars.

Dies from which the pilot model parts were made were cast in KirkSITE from plaster molds made directly from the handmade die models. The new type of pilot model construction made possible the much larger fleet of 73 models used in the 1952 production.

Casting the pilot dies eliminated the old process of hammering out parts over wooden forms as was formerly done in constructing pilot models. It resulted in three major improvements.

**Saves Time**—A much faster process, it saved considerable time in turning out the models. Probably the most important factor is that the process by which the model parts were actually

constructed by stamping proved the permanent tooling. It also enabled the auto company to turn out more models as indicated by the 73-model fleet.

As the first automotive manufacturer to fully utilize the process, Ford developed tools and special equipment costing more than \$500,000 and developed a unique stationary assembly line for pilot models.

## Schools Train for Auto Industry

In an effort to solve the problem of a scarcity of skilled workers and at the same time "train students to make a living in Detroit," the Detroit Board of Education is starting to place more emphasis on high school vocational programs.

It has received excellent cooperation from industries which have provided auto units, service manuals, instruction charts, and other aids with an eye to a future cooperative arrangement between teaching methods and auto dealers and plants.

## THE BULL OF THE WOODS

By J. R. Williams





# are you using more copper

## THAN IS REQUIRED?

Can you use tubing of a lighter wall, for instance, than you are now using, without losing any efficiency, and still be within standard?

Or if you contemplate a replacement, would a tube of smaller diameter serve the need as well? Would a shorter length suffice?

If, by changing the installation or slightly redesigning the unit, could you effect a saving of tube and still keep the unit at maximum operating efficiency?

Copper, as you know, is in short supply and we must conserve its use wherever possible. If in the case of copper or copper base alloy tubing you can figure out how you can use just a little less than you might normally employ, you will do your part in helping the defense program. If all of us would share in conserving this scarce metal, we could reduce our individual handicap and be able to carry on with very little loss of efficiency.

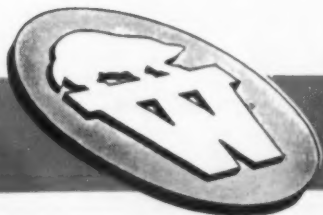
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## West Coast Report

### Strike Threat Has Little Effect

**Western steel markets as yet do not reflect many strike jitters . . . Some buyers attempting to beat possible price boosts . . . Supplies generally good . . . Nevada ore for Japan.**

Up until Friday of last week an impending steel strike appeared to have but little effect on the steel market in the West.

However, late Friday there were a few reports from steelmakers that buyers were attempting to fill inventories to legal limits in view of possible price increases. Only free steel apparently is in the wire product class with some excess production of cold-rolled sheets by eastern mills also being offered in the Pacific Northwest. That area is attractive to eastern producers because of the higher ceiling price of California producers. Freight absorption is not sufficiently great to do much more than equalize delivered prices.

For the present at least, Pacific Northwest buyers of cold-rolled sheets with CMP tickets are in a good position.

To all appearances, the western steel market is rapidly approaching balance. Fabricators have generally good supplies; jobbers are balancing inventories; and few manufacturers are in short supply.

**Price Is the Factor**—When the steel companies announced that pay increases recommended by Wage Stabilization Board would justify a price increase of about \$12 per ton, western steel producers were prepared for a bombardment of demands for early shipment to get under the wire of price increases.

A secondary reaction occurred in the iron and steel scrap market. Cast iron scrap has been steadily dropping in the West while steel-making grades held firm. Competent observers believe that with an almost certain price increase for

steel, both will move up in sympathy with the national trend. Last week there were definite signs that steelmaking grades might firm up after 1 or 2 weeks' softness. Quality has been better and supply good.

**Peak Is Passed**—Whatever the reason, California manufacturers now believe that business volume is leveling off at a high mark.

A survey among California manufacturers by the California Manufacturers Assn. indicates that most expect a reduced volume until at least July and second quarter employment prospects parallel these findings.

In other words, with few exceptions, California manufacturers do not expect better business in the second quarter of 1952 than in 1951 and many think it may be less.

This is reflected in reports by the California State Chamber of Commerce which show that with the exception of industries and lines of trade supported by large defense expenditures, business trends in California slackened in the first 2 months of 1952.

The stretch-out program in defense production has had its effect on contracts and contributed to an easing of the metal supply.

**Still Not Too Bad**—In spite of the sobering report from manufacturers, it is notable that in 1951 capital investments in manufacturing facilities in California reached an all-time record total of \$539,316,000, which was more than double any post-war year.

Big question for metal producers and workers is "where will it end?" Many analysts believe the

limit of industrial expansion on the West Coast is directly proportional to population growth. This leads the more optimistic to believe that no matter what the peace or war situation may be, the West Coast will be as safe an investment as can be found.

**Still Binding**—Machine tool shortages have bottlenecked production of everything from light tractors to heavy bombers. According to spokesmen for the Aircraft Industries Assn. tool shortages are at the seat of the delay in airframe production.

It doesn't take much investigation to show that delays of from "6 to 18 months" in deliveries of special tools are not unusual in the specialized aircraft field. But there is considerable question as to why more nearly standard machine tools are hard to get.

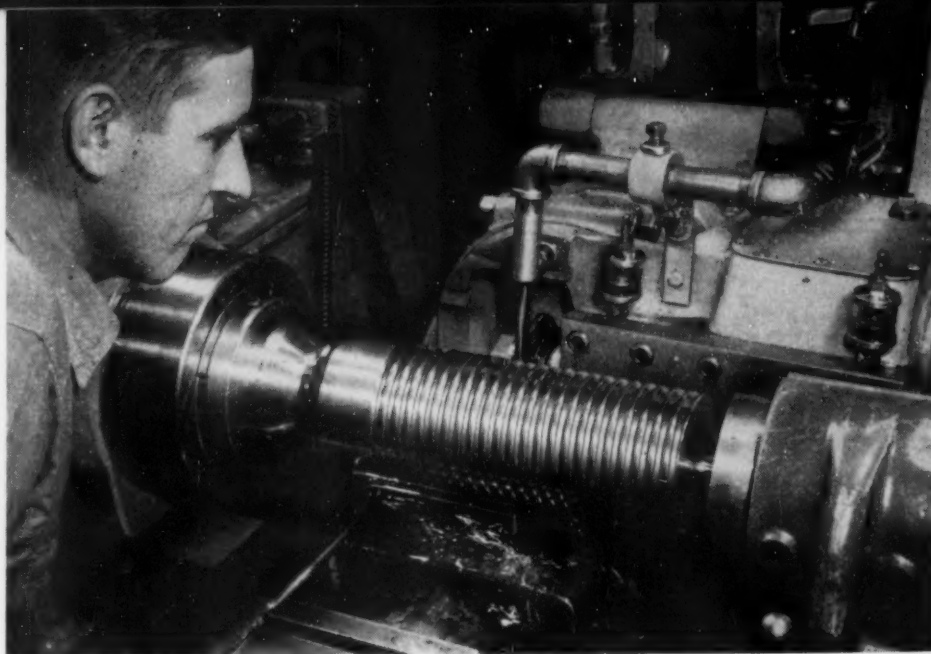
Even far-sighted users who relied on foreign tool manufacturers for equipment are only now getting machines ordered more than a year ago. A Los Angeles concern is about to get delivery on tools ordered in January, 1951.

**More Ore Leaving**—If well-documented plans work out, more than 1 million tons of Nevada iron ore will leave the country for Japan very soon.

Overseas Terminal Transit Corp. is putting in ship-loading equipment at Port Hueneme (about 60 miles north of Los Angeles) for handling western iron ores.

Complete facilities include wharfage; storage capacity of approximately 100,000 tons; a 100-car conveyor, storage space.

**Correction**—In the table "West Coast Steel Production" on this page Mar. 20, the category Miscellaneous (Includes Forgings) was mistakenly footnoted as not being included in the rolled products totals. It is of course included in the totals as given.



**THREAD MILLING A SCREW.** Metal: SAE 2345 steel heat-treated to 28 Rockwell • Machine: Lees Bradner thread miller • Part: 5 1/4" adjusting screw for press brake • Operations: rough and finish thread milling • Tool: high-speed steel • Feed: 0.260 depth on roughing • Cutting Oil: Sunicut 105



**BROACHING A GEAR KEY-WAY.** Metal: SAE 2345 steel forging 220 Brinnell • Machine: 3L8 La Pointe hydraulic broach • Part: gears for shaper, produced two at a time • Tool: 3' high-speed steel broach • Cutting Oil: Sunicut 105

## SUNICUT 105 REPLACES THREE OILS AND SOLVES FIVE MAJOR PROBLEMS

Buying three cutting oils and then blending them to make additional grades had proved highly unsatisfactory to a machine tool builder. The smoke was noxious, employees complained of skin irritations, the color of the oils made it difficult to see the work, tool life was short and finishes not up to standard. To help solve these problems, the company called in a Sun representative and on his advice tested Sunicut 105 on the three tough jobs pictured here.

So good were the results that the company adopted Sunicut 105 for every machine in the plant and has used it exclusively for the past two years. The operators like its transparency. There are no complaints about smoke or skin irritations. Finishes have improved and tool life increased as much as 50 percent.

For complete information on Sun's cutting oils, write to Department IA-7 and we will send you a copy of our informative, illustrated booklet "Cutting and Grinding Facts."

**CUTTING A LARGE GEAR.** Metal: bronze 180 Brinnell • Machine: Gould & Eberhardt gear hobbing machine • Part: main drive worm gear wheel for large shear • 42 5/8" O. D.; 5" thick; 87 teeth • Tool: high-speed steel hob • Feed: 0.006 • Speed: 42 rpm • Cutting Oil: Sunicut 105



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# Machine Tool High Spots

## Graded Tool Priorities Imminent

**First step in general streamlining . . . Military pushes stockpile plan . . . Chicago show sales heavy . . . Dollar-hungry Europeans seek U. S. market with exhibits — By G. Elwers.**

The long-awaited system of graded machine tool priorities is about due. Defense Mobilizer Wilson will probably have made an announcement about the plan by the time this page appears in print. It will be a month or so before the plan can be put into effect. Clay Bedford, special assistant to the Secretary of Defense, said recently he thinks the new plan is better than World War II's E-1-b system.

The priority plan is only a part of an ambitious new program to straighten out the machine tool situation, which Wilson will announce. A machine tool commission is to be set up, and many different steps to improve machine tool production are to be considered. The priority plan is one of the major steps already decided on. Reportedly, a stockpile or reserve plan is another.

**NMTBA Against**—The machine tool reserve idea is being actively pushed by Bedford and some military leaders. The National Machine Tool Builders' Assn. strongly opposes purchase of large quantities of new machine tools for stockpiling, and it is doubtful if this idea will be incorporated in the reserve setup. But some sort of reserve will be established.

Beards and foreign machine tools attracted maximum interest at the recent exhibition of the American Society of Tool Engineers in Chicago.

The beards adorned the faces of citizens of Rockford, Ill., which is preparing to celebrate its centennial.

**Foreign Tools**—Displays of German, French, Swiss, English,

Belgian and other machine tools were extensive. And the booths were all crowded. Undoubtedly most of the crowd members were attracted mainly by curiosity. Exhibits of foreign motor cars are always crowded, too, but few buy.

In this case, however, it was evident that more than just a few were buying. Sales of all equipment at the show were heavy, and exhibitors of foreign tools shared in this business. Most of them expected to sell all the machines in their booths and write substantial orders besides.

Representatives of foreign firms and their distributors at the show emphasized their belief that a large market for their equipment existed in the U. S.

They said they were going after it with strongest possible effort.

**No Competition**—In an interview, representatives of Belgian, Swiss, and English machine tool builders said, however, that they neither expected nor desired to compete directly with U. S. machine tools here. Foreign machines cannot match our high-powered, rugged, high-production machine tools, they agreed.

For example, the British engineer pointed out that compared to U. S. milling machines those made in England are low powered and light. They are not intended for high production use. But, he said, long British emphasis on design for efficient short run work makes their machine tools versatile and easy to set up. It is the market for such machines that his country is developing here.

In normal times, each of the three countries buys more machine tools from the U. S. than it sells at current sales levels. In recent months, of course, U. S. priority restrictions have cut down their purchases here, as have dollar shortages.

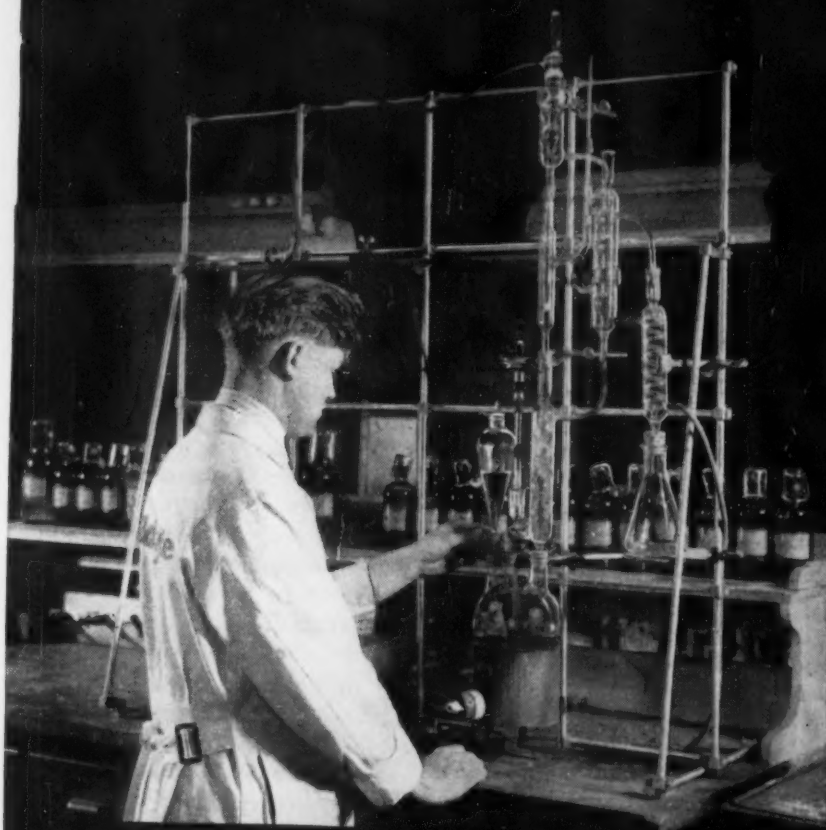
**Dollar Shortage**—Current Belgian exports of machine tools to the U. S. are at an annual rate of about \$5 million, it was reported. Swiss sales here were estimated at between \$5 and \$10 million. In neither of these nations is the dollar shortage so severe as it is in Britain.

The English need dollars so badly they must export even some machine tools needed at home, their representative said. Otherwise they would not have enough dollars to buy from the U. S. tools which they do not make in England, but need there now for defense production.

Since Britain's need is so great that she must export some machine tools, it tends to weaken civilian industry in favor of defense. But she must earn dollars to buy tools from the U. S. which she doesn't make.



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# The Iron Age

## SALUTES

*Charles W. Perelle*

A crack designer and administrator has tackled tough production jobs with zest and inventiveness.



**B**ACK in 1930 a jobless graduate engineer wandered into Boeing Aircraft in Seattle. The best job he could get was painter's helper. By 1940 the painter's helper, now one of Boeing's crack design engineers, was picked to open a new bomber plant in Vancouver, B. C.

Charley Perelle, president of ACF-Brill Motors of Philadelphia, is the son of a Klondike gold rush prospector who panned icy Yukon streams for a slim yield. As a top flight designer and administrator, Charley has tackled some equally tough jobs and struck pay dirt.

When he joined ACF-Brill in 1949, the company had seldom shown great profits. In 2½ years he turned a \$2 million loss into a \$2,507,000 profit without a big gross increase. In 1946 at Gar Wood Industries he converted a \$6 million annual loss into a \$2 million profit in 2 years.

Charley tackles plant and production problems with zest and inventiveness. Unable to find engineers for a new Vancouver bomber plant, he hired the entire graduating class of an engineering school and trained them himself.

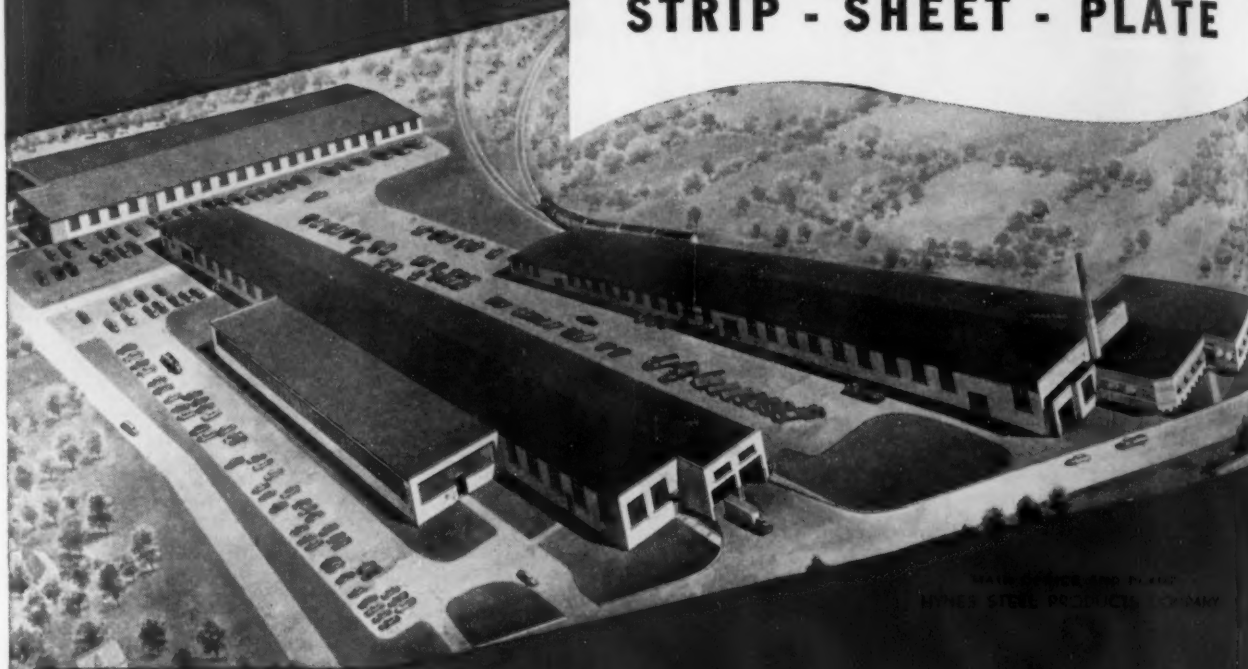
In 1942 he set up the first mechanized aviation assembly line for Vultee. In an unprecedented move he hung training plane fuselages upside down from a mile long conveyor belt so more men could get at them.

First and last a team player, Charley is also a first-rate captain. His doctrine, "organize, deputize and supervise," includes everyone from the brass on down. His shirt-sleeve discussions of company policy with foremen have helped eliminate labor strife and made him his own best labor relations manager.



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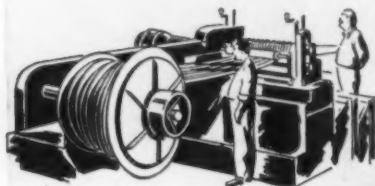
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# The Iron Age

## INTRODUCES

George Fedurek, becomes vice-president, CONTINENTAL STEEL OF OHIO, LTD., Fremont, Ohio.

Allen Latham, Jr., elected vice-president, ARTHUR D. LITTLE, INC., Cambridge, Mass.

Charles W. Stone, elected vice-president and a member of the board of directors, INTERSTATE DROP FORGE CO., Milwaukee.

Sanford J. Schoen, promoted to assistant to the president, EMERGENCY STEEL SERVICE CORP., Skokie, Ill. Scott F. Burton, becomes sales manager.

Lloyd H. Herthneck, named manager and a vice-president, MASTER METALS, INC., Cleveland.

Otto Svoboda, appointed sales manager, E. W. BUSCHMAN CO., Cincinnati.

W. A. Glimm, appointed director of purchases, GAR WOOD INDUSTRIES, Wayne, Mich. W. C. Robertson, named vice-president in charge of government sales and regulations; E. B. Hill, vice-president—domestic and export sales.

J. N. Vincent, appointed manager, customer's plant layout department, CONTINENTAL CAN CO., New York.

Fred H. Tholen, promoted to sales manager, J. B. Ford Div., WYANDOTTE CHEMICALS CORP., Wyandotte, Mich.

Arthur Templeton, appointed southwestern divisional sales engineer, TEMPLETON, KENLY & CO., Chicago.

George E. Clifford, named vice-president, KITTANNING REFRAC-TORIES, INC., Pittsburgh; Samuel L. Shober, Jr., president and J. Norman Davies, secretary-treasurer.

David R. Warner, appointed sales manager, MILLER ELECTRIC MFG. CO., Appleton, Wis.

Merle W. McLaughlin, appointed manager, Landing Gear Div., WILLYS-OVERLAND MOTORS, INC., Toledo.

G. G. Willson, appointed manager, technical service section of "3M" coated abrasives laboratory, MINNESOTA MINING & MFG. CO., St. Paul.

A. F. Siers, appointed sales manager, Motor Coach Engine Div., FAGEOL PRODUCTS CO., Kent, Ohio.

James Fentress, named sales engineer, FOOTE MINERAL CO., Philadelphia.

Paul J. Scherbner, named superintendent, Nonferrous Foundry Dept., WINTERS FOUNDRY & MACHINE CO., INC., Canton, Ohio.

Stephen J. Tompkins, appointed assistant chief engineer, truck design section, Engineering Div., CHRYSLER CORP., Detroit. Robert M. Rodger, named chief engineer, Jefferson and Kercheval plants.

Francis Juraschek, appointed assistant director of distribution and availability, and Albert A. Monnett, Jr., assistant director of commercial research (markets), U. S. STEEL CO., Pittsburgh.

Gus M. Bagnard, appointed chief engineer, CHIKSAN CO., Brea, Calif.



EMMETT A. BRADY, named works superintendent, Coke Works, American Steel & Wire Div., U. S. Steel Co., Cleveland.



J. A. STREET, promoted to manager of scrap purchases, Sheffield Steel Corp., Houston.



JOHN H. BUTCHER, elected president, Butcher & Hart Mfg. Co., Toledo.

## Personnel

Continued

R. B. Meneilly, appointed assistant to manager, tinplate sales; George N. Schramm, assistant to director, market development division; and Wallace Diffenderfer, assistant director of organization and personnel, U. S. STEEL CO., Pittsburgh.

W. R. Cornthwaite, appointed manager of the sodium products group, sales division, Electrochemicals Dept., E. I. duPONT de NEMOURS & CO., Wilmington, Del.

J. H. Stockfish, appointed maintenance engineer, SHARON STEEL CORP., Sharon, Pa.

Henry C. Wulff, appointed plant superintendent, Lincoln Park Div., LINCOLN PARK INDUSTRIES, INC., Lincoln Park, Mich.

Patrick J. Gleason, appointed general sales manager, TAP & DRILL E-Z CORP., El Segundo, Calif.

W. J. Langacher, appointed chief engineer, and G. E. Mandry, assistant chief engineer, Pipe and Tube Div., AETNA-STANDARD ENGINEERING CO., Pittsburgh.

Wendell A. Doty, promoted to comptroller, RUST ENGINEERING CO., Pittsburgh. Ernest F. Selander, named assistant comptroller, and Lindley J. West, auditor.

W. E. Todd, appointed southern manager, Pre-Engineered Div., MECHANICAL HANDLING SYSTEMS, INC., Detroit.

Charles R. Gibbs, named assistant supervisor of mechanical service and erection, ALLIS-CHALMERS MFG. CO., Milwaukee.

Alexander Sellers, Jr., named sales development manager, Machine Tool Div., VAN NORMAN CO., Springfield, Mass.



E. T. MORRIS, appointed manager of subcontracting, Westinghouse Electric Corp., Pittsburgh.



EVERETT H. GILMARTIN, named superintendent of industrial relations, Brainard Steel Div., Sharon Steel Corp., Sharon, Pa.



RAYMOND J. ZALE, appointed sales metallurgist, Firth Sterling Steel & Carbide Corp., Pittsburgh.



LLOYD R. COOPER, appointed chief metallurgist, Eddystone, Pa. plant, Heppenstall Co., Pittsburgh.

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# Machine makes cores FASTER, CHEAPER, BETTER



By Herbert Chase  
Consultant  
Forest Hills, N. Y.

Complex cores can be rammed better, faster and at lower cost in a new, automatic core making machine in use at Buick. Only hand operations left are inserting wires where needed, putting driers in place, and transferring driers with cores to baking oven conveyer. Boxes, which may be cast iron or aluminum, are not touched by hand. Five table stations index smoothly through five stations. A modified Geneva indexing motion helps avoid shocks in accelerating and decelerating. Boxes to 15 x 36 in. with a 10-in. draw may be used. Core quality is uniform.

A revolutionary sand core making machine is in use at Buick Motor Div., of General Motors Corp., Flint, Mich. Recently, after careful study, Buick engineers decided that nearly all steps in core making could be mechanized if a special indexing type of machine, Fig. 1, was developed. Osborn Mfg. Co., Cleveland, which had long experience in building core blowers used by Buick, built and developed the machine in cooperation with Buick engineers.

Primary aim was to eliminate handling and manual operations common in core making. Ordinary core blowers lock, fill and unlock core boxes. Handling of boxes and their parts, such as opening, cleaning, lubricating, placing wires, moving loose pieces and closing and placing the box in the blower, are done by hand. In the new machine, all operations, except for placing wires when needed, placing driers on cores, and removing with cores are done automatically. Only

one of five stations is given over to the blowing operation. An automatic core rollover and core draw mechanism are combined at one station.

With the new machine it is possible to make single cores of large size, when there is only one per box, or multiples of this number when there are two or more impressions per box. Boxes can be 12 x 40 in. to 25 x 36 in. or smaller and may have any draw up to 10 in. The machine can be run continuously, stopping only to change boxes. Such changes require an average of about 12 min. If used continuously three shifts a day, the machine is shut down for cleaning and servicing after 5 days. Servicing is simple and quickly performed. Basically, the machine is an automatic indexing table, Fig. 2, supplemented by actuating and some other auxiliary equipment, including a core blower. In one cycle, each of the five sections of the table stops once at each station. At each pause, one or more

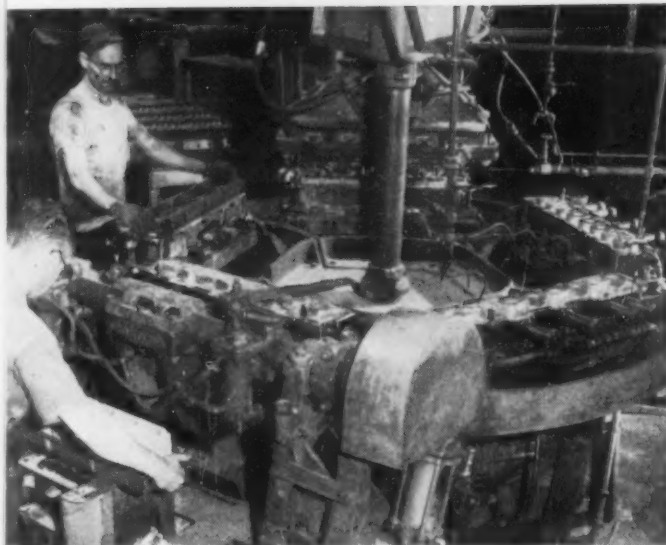


FIG. 1—Core making machine as it appears in operation. Man in left background is placing a dryer on top of a core just indexed from the blower station. Second operator is removing a core on a dryer at the rollover.

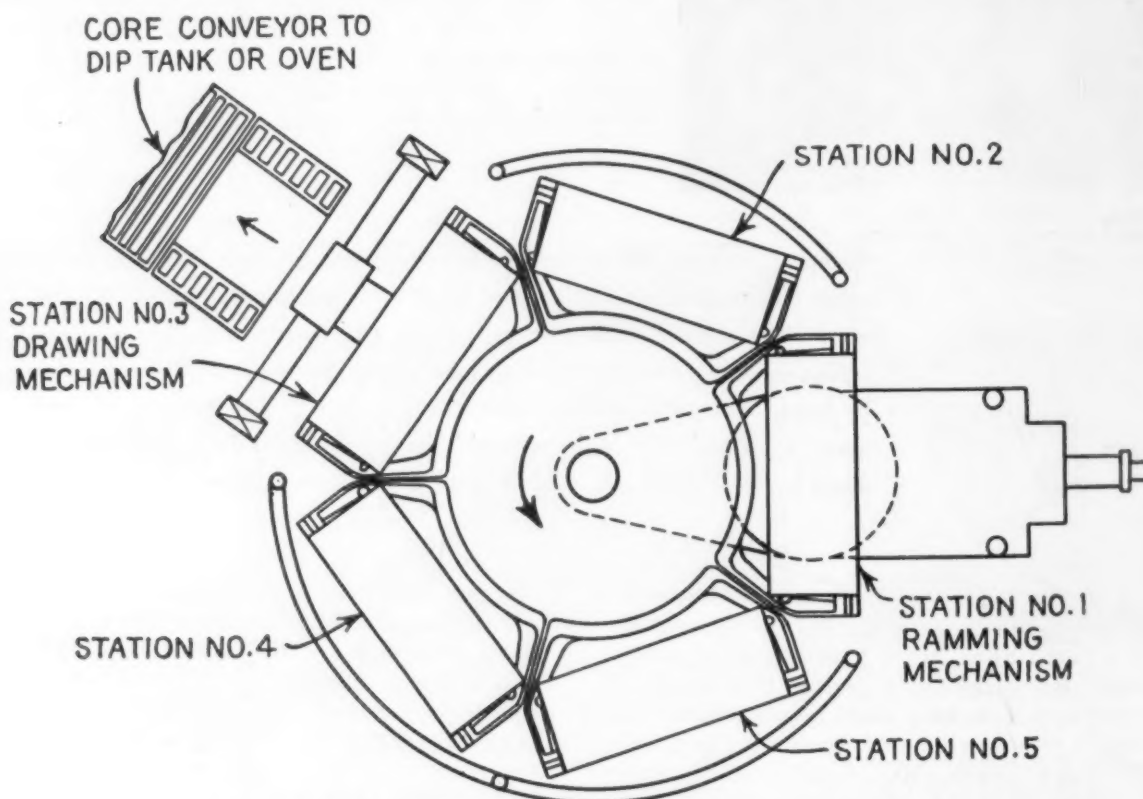


FIG. 2—Outline plan view of the indexing core making machine showing the five stations through which the table is indexed in each core making cycle.

#### Core making machine (continued)

operations are performed, most of them automatically.

Usually, two men tend the machine. One removes a dryer from an adjacent conveyer and places it over a core already made and resting in the lower half of the box. The other unloads the dryer, after it has received the core and

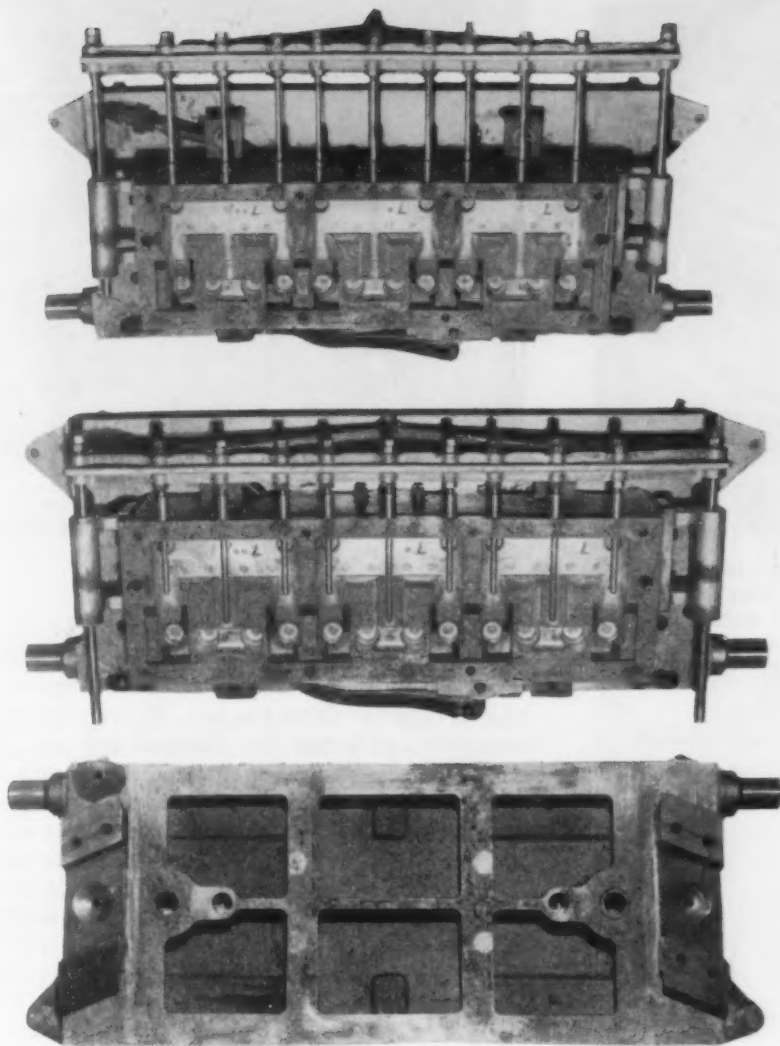
transfers it to a conveyer for advance to a core oven. If cores need wires these are placed by a third man. Wire insertion is the only hand operation involving the core box itself (as distinct from those on the driers).

Only the lower section of the core box, Fig. 3, is indexed with the table. The upper portion remains in the blower. Blowing, that is, ramming or filling with sand, is done at the first station. The blower, similar in principle to ordinary blowers, differs in design and in most mechanical motions. The lower portion of the box has to be moved into position by indexing on the table. All other motions, some of which are commonly done manually, are effected by compressed air.

Three instead of the usual four tie rods are used in the blowers. One of these is at the center of the rotating table. These rods take the stresses involved in clamping the two halves of the box when in position. At the first or blower station, the upper half of the box is attached to a head which is moved along a track by an air plunger. In the head, is a sand chest that is

filled automatically with sand when moved to its outer position, Fig. 4. After filling, the head is moved back to blowing position.

It is not necessary, as in conventional blowers, to insert an assembled box and elevate it against the head because the upper half of the box is already fastened to the head. Instead, after the lower half of the box has been indexed into position, it is elevated automatically and



SIG. 3—Lower or port section of a core box as seen from the top and bottom. In the top view, vents are in "out" position and in the center view they are in "in" position. Guide holes insure correct location.

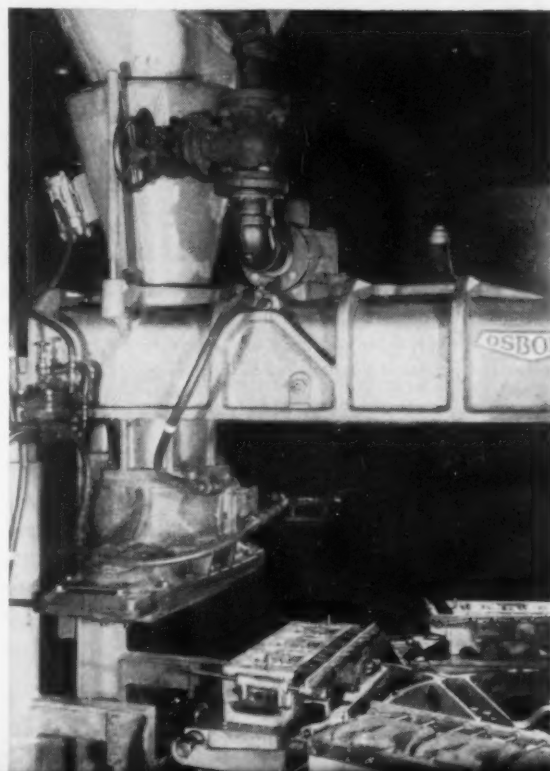
air clamped to the upper half, Fig. 5, before blowing occurs. Clamping is done under more pressure than in conventional blowers and firmer cores are obtained.

Core vent rods, see Fig. 3, are moved in and out automatically and any loose pieces required are moved into position and locked by air plungers before blowing takes place. Blowing is effected by opening a valve in the 10-in. throat above the sand chest and admitting air at 125 psi to the chest to force the sand into the pre-clamped box.

After the box is filled and unclamped, vibrators operate on the upper half to help free the core as the lower half, along with the core, is lowered onto the indexing table. Air jets are opened by blow sand off the screens at exhaust ports. When the lower box is returned to the table, indexing to the second station, Fig. 6, occurs. At the same time, the next lower half, ready for filling, moves into the blower and all other lower boxes on the table advance one station. While indexing occurs, the upper box, still attached to the blower head, is again moved outward, Fig. 4, for refilling the sand chest.

Operations at the blower are automatically timed. At the second station, Fig. 6, any loose

FIG. 4—Blow station at left with upper portion on the head after the head has been moved outward to the station where sand is fed into chest. Cores just indexed from blower are at lower right at No. 2 station.





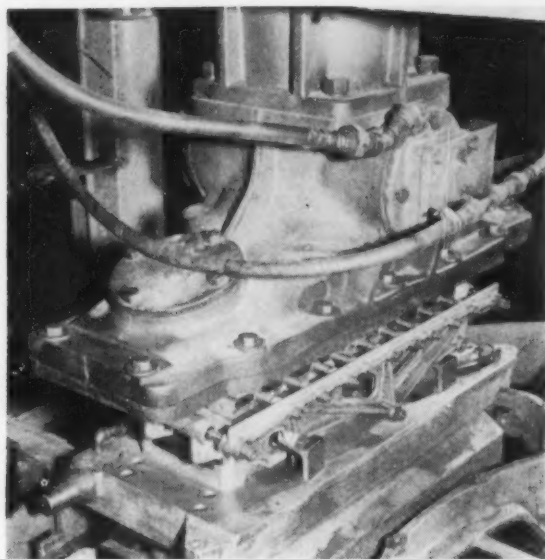


FIG. 5—Blow station with two halves of core box locked together ready for the blow. After blow, lower half is lowered to table and indexed to No. 2 station.

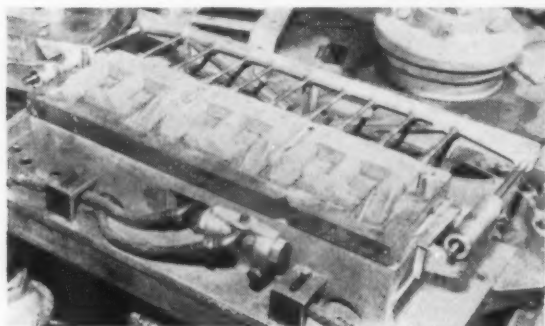


FIG. 6—Three cores just blown are shown at No. 2 station ready to have a dryer placed on them.

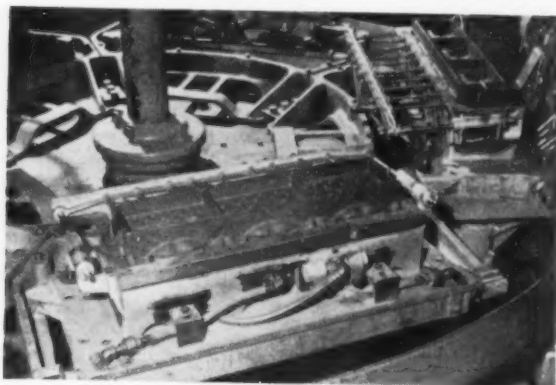


FIG. 7—Station No. 2 as it appears after a dryer has been set over the cores by hand. At upper right a core box is shown with the dryer clamped and ready to be rolled over after the turntable has indexed to Station No. 3.

#### Core making machine (continued)

pieces used in the box are withdrawn by air plungers, leaving the core resting in the box and ready for removal. To remove the core without injury, an aluminum or magnesium dryer plate made to fit and support the core, is placed by

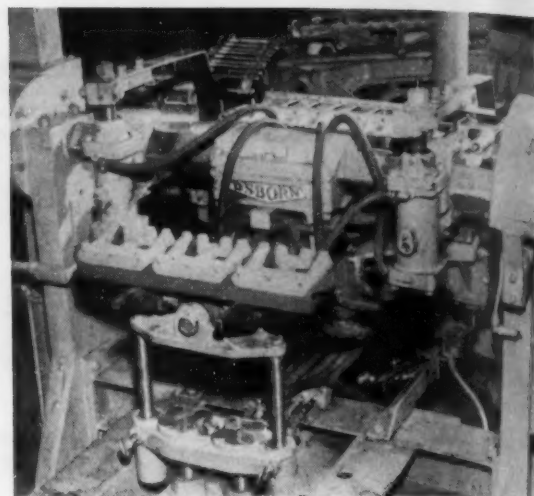


FIG. 8—Three complete cores are shown on a dryer after the rollover has deposited them on a stand and has rocked back to pick up the next set.

hand on top of the core, Fig. 7. The table then indexes, bringing the box and core, along with the dryer plate, into the third station. Here the core is removed from the box. To transfer the core, box and dryer are clamped together to avoid any relative motion. They are gripped in a rollover frame pivoted to a support outside the table circle. The frame, with dryer and lower box, is rolled over 180°. The dryer comes to rest on a stand, Fig. 8. Vibrators help free the core from the box, leaving the core on the dryer, which is then released. The rollover then rocks back returning the box to its former position on the table.

#### **Lubricant sprayed on**

There, the box is unclamped and the rollover frame rocks free of the box. The table indexes the box into the fourth station. Here loose pieces, if used, are automatically moved into position. Any loose sand particles are blown out, lubricant is automatically sprayed on and the box is indexed to the fifth station.

If cores do not require wires, no operations are performed at the fifth station. If wires are needed, a man at this station places them where needed in the box, leaving it ready for advance into the blower, where the next cycle is started.

#### **Core quality, size uniform**

Cores supported on dryers and deposited on the stand at the third station are ready for baking. Dryers with cores are removed by hand, and placed on a conveyer to be carried to a core oven. The cores are not touched by hand. No manual labor is needed except for inserting wires, placing the dryer and removing it from the stand with the core. Cores are uniform in size and quality is better than for cores blown in conventional fashion.

Floor space occupied by the machine is not much greater than that required for an ordinary

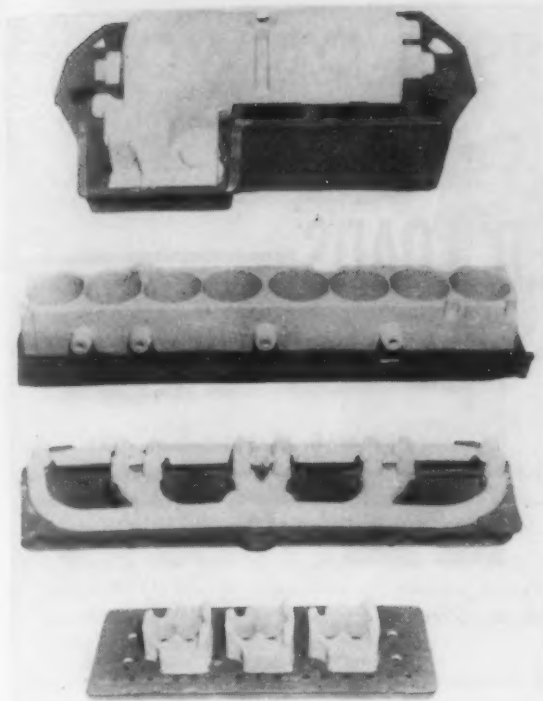


FIG. 9—Four cores in dryer typical of the types and sizes produced in the new machine. They are, top to bottom: Dynaflo core, block water jacket, exhaust manifold cores and heater box for intake manifold.

core blower and the table to and from which the core box must be constantly shifted by hand. Labor charges per core are exceptionally low. Since operators work well outside the circle in which the table turns, safety is at a maximum.

The machine can make about 90 pct of all cores Buick requires including cores for gray iron castings in engines and transmissions. Many cores are complex and must be held within closer dimensions than in ordinary core work.

Maximum draw for this machine is 10 in. Cores needing a greater draw cannot be made in

this machine. These include cores that form the bores of cylinder blocks and the recess in the integral portion of this casting, which is the upper half of the crankcase. Now being made are cores for inlet manifolds, water jackets, spark plug openings, cylinder heads and scores of others, some of which are shown in Fig. 9. All of the most difficult cores required in the Buick foundry are made in this machine.

To protect unbaked sand cores from shock during the cycle oil cushions are provided for air operated plungers where necessary. A modified Geneva indexing motion helps avoid shocks in accelerating and decelerating table motions. No hand mallets, such as are often used in core making, are needed when the machine is used and this has been reflected in lower costs for core box upkeep.

Initial core box cost is increased because five lower halves are needed. As no handling is required cast iron boxes can be used affording greater resistance to wear than aluminum boxes.

#### Machine components simple

Nearly all components of the machine are simple. Many are stock items and moderate in cost. Total cost of the machine is much below that for many machines required in automotive manufacturing. Interlocks insure correct sequences in the operations performed. This is attained by using standard times, and limit switches which control solenoid operated valves in the air circuits.

Metal core boxes designed for other core blowers may be used provided four extra lower halves are provided. It is possible to adapt the machine, or one operating on the same principle, to many classes of work, provided the quantity of casting justifies the core box equipment needed. As the savings in labor charges are exceptionally high, higher investments in core box equipment may be justified.

## NEW BOOKS

"Basic Open Hearth Steelmaking," by A. W. Schlechten. The second and revised edition represents the combined efforts of educators, research men and operators to present the theory and practice of the openhearth. The book provides authoritative and up-to-date information on the process. Part Two is devoted to high temperature reactions, slag-metal reactions, thermal changes in melting and refining, the theory of combustion and heat transfer, and the relation of these to steel-making. American Institute of Mining and Metallurgical Engineers, 29 West 39th St., New York 18, N. Y. \$8.00. 940 p.

"Corrosion Testing," by Francis L. LaQue. Distinctions between the corrodibility of a material and the protective value of its corrosion

products and how these are influenced by material composition and conditions of exposure are explained. Originally presented as the Edgar Marburg Lecture. American Society for Testing Materials, 1916 Race St., Philadelphia 3. \$1.50. 89 p.

"Extrusion of Plastics, Rubber and Metal," by Herbert R. Simonds, Archie J. Weith and William Schack. Three authorities have cooperated in producing this book on the extrusion process, a versatile manufacturing operation which is becoming increasingly important. About two-thirds of the material is devoted to extrusion of plastics. Special attention is given to recent advances in metal extrusion. Reinhold Publishing Corp., 330 W. 42nd St., New York. \$10.00. 454 p.

# How to DESIGN FOR REPEATED LOADS

By R. L. Templin

Assistant director of research &  
chief engineer of tests



E. C. Hartmann

Chief, engineering design division  
Aluminum Research Laboratories

Aluminum Co. of America  
New Kensington, Pa.

Most parts or structures will stand many repetitions of load almost equal to the static ultimate load. Others fail after very few cycles. Improved design can preclude early failure. First "DO," is give major attention to stress concentrations rather than average stresses. First "DON'T," is avoid attachments, steps, grooves, openings or other abrupt changes in section at high stress locations.

It is quite well known that metals may fail under the action of repeated loads, even when the loads are of considerably lower magnitude than those required to cause failure under a single application. When the stress at some location is high enough and is applied often enough, a minute crack appears and gradually extends during succeeding cycles until the strength of the part is so reduced that the part ruptures completely.

Many factors influence the time interval between the formation of the first minute crack and the final failure of a part. On one extreme are parts in which this interval is very short compared to the over-all life of the part. The others, frequently encountered, are fatigue cracks which seem to be self-stopping because of the fact that as the crack progresses it renders the part less stiff, with a resulting transfer of load to some other adjacent part capable of sustaining the added loading.

Present-day knowledge of fatigue is not sufficiently advanced to permit design for a specified life within close limits even in the simplest parts. This is in marked contrast to present-day knowledge of static design where the designer can work to specified loadings within close lim-

its even on fairly complex assemblies. Even under carefully controlled laboratory conditions, using duplicate test specimens, testing machines, specimen preparation, and testing technique, it is not unusual to encounter ratios of 5 to 1, or 10 to 1 of fatigue life of specimens of the same material. Small decreases in actual maximum stress level for a given set of repeated-load conditions are usually conducive to large improvements in fatigue life. If the engineer focuses his attention on controlling maximum stresses the problem becomes less discouraging and the question of the exact life of the part frequently becomes of only academic interest.

## Prediction of part life difficult

It is not possible today to design for a specific life or to predict the life of an existing part within close limits. This should not discourage the engineer from trying to obtain satisfactory resistance to fatigue action. It is not a difficult matter to review a design and to modify it to give better performance under repeated loadings. Most outstanding cases of fatigue failure in service are traceable to conditions that are today recognizable in advance as poor design from the fatigue viewpoint. Many such cases are susceptible to fairly simple remedies once they have been brought to the attention of the designer.

Most parts will withstand 100 to 1000 repetitions of a load almost equal to their static ultimate load. Where the number of cycles of loading applied to a part is relatively small the part can safely be designed for static action alone, without regard to the effects of repeated loadings, thus greatly limiting the field in which it

Turn Page



# HOW TO IMPROVE FATIGUE LIFE



## Do's

1. Give major attention to actual stresses, including stress concentrations, rather than to the nominal average stresses.
2. Visualize how load is transferred from one part or section to another in a structure or machine and the distortions that occur during loading, to help locate the points of high stress.
3. Use gradual changes in section and symmetry of design.
4. Give careful attention to location of joints and types of joints used.
5. Use symmetrical joints wherever possible.
6. Use suitable means to stiffen unsymmetrical joints.
7. Design joints so that all parts will participate equally.
8. Give more attention to possible tensile failure of the plates, rather than to shear failure of the rivets under repeated loads.
9. Avoid open holes and loosely filled ones.
10. Give more attention to holes containing stressed rivets or bolts than to those containing idle or unstressed rivets or bolts.
11. Use tightly drawn-up bolts.
12. Use simple butt joints in preference to other types of welded joints.
13. Dress weld beads flush with adjacent plates for welded butt joints for maximum fatigue strength.
14. Alleviate possible fretting between faying surfaces.
15. Give preference to redundant-type structures where this type of structure is permissible.
16. Give careful attention to fabrication details to improve fatigue life.
17. Choose the proper surface finishes.
18. Provide suitable protection against corrosion.
19. Watch for opportunities to pre-stress members or parts of members to reduce the range of stress without appreciably increasing the maximum stress in the cycle.
20. Consider the benefits of shot peening and localized cold working.
21. Watch the geometry of a welded joint, including such factors as smoothness, undercutting, cracks, excessive porosity, spatter, and symmetry.
22. Consider the effects of temperature on the fatigue properties of metals used in machines or structures.
23. Give attention to proper maintenance of machines and structures subjected to fatigue action in order to obtain maximum service life.



## Don'ts

1. Don't attach secondary brackets, fittings, handles, steps, bosses, grooves, and openings at locations of high stress.
2. Don't use rivets for carrying repeated tensile loads. Bolts are usually superior to rivets under repeated tensile loadings.
3. Don't expect maximum fatigue strength of parts in which machine countersunk rivet holes are used. Machine countersunk rivet holes are prone to produce fatigue failures.
4. Don't depend upon arresting the growth of propagation of fatigue cracks by drilling holes at or near the ends of active cracks or by removing the crack and the adjacent material.
5. Avoid types of metallic plating that have widely different characteristics from the underlying material.
6. Avoid the use of machines and structures under conditions involving vibration at the critical or fundamental frequency of either individual parts or of the structure as a whole.

### Designing for repeated loads (continued)

is necessary to apply the principles and practices discussed in this paper. Other designs, though subjected to many cycles of very small loadings, are subjected to only a few cycles of loadings large enough to cause fatigue action. If loadings are present that produce tensile stress peaks (nominal stress times stress concentration factor) approaching or exceeding the fatigue strength of the material for the stress ratio and number of cycles under consideration, it is well worth-while to make some further fatigue analyses.

Little attention will be given here to the selection of material, which is often dictated by considerations other than maximum fatigue strength. Furthermore, tests indicate that selection of material, within rather wide limits, is not nearly so important in achieving satisfactory fatigue life as is the exercise of care in design, fabrication and maintenance.

#### **Changing material doesn't help**

While minor improvements in fatigue life may be accomplished merely by changing materials, few serious fatigue difficulties have been completely corrected merely by changing materials. Serious fatigue difficulties are almost always traceable to improper design, fabrication and maintenance. Until design, fabrication and maintenance are improved, it is futile to seek relief through mere substitution of one material for another.

Published fatigue strengths of materials must be used with caution in selecting materials for resistance to fatigue in engineering applications. Sometimes the samples used for the fatigue tests are not truly representative of the material to be used in the actual structure. Internal discontinuities and defects may have deleterious effects on the fatigue properties. Smooth-specimen fatigue results often rate materials in a different order from notched fatigue specimens. No one style of conventionalized notch can adequately represent conditions in engineering structures and parts.

#### **Stress concentration most important**

Even though the mathematical determination of peak stresses is usually not a practical design procedure, an understanding of this subject is the key to good design for fatigue. Almost without exception it can be stated that any modification of the form or dimensions of a part which alleviates the peak tensile stresses will improve fatigue life. Thus, by studying stress concentration factors, much can be learned about how to produce designs that are superior from the standpoint of resistance to repeated loads and how to evaluate approximately the influence of various geometric features.

A frequent source of high stresses and conse-

quent poor fatigue life is found in unsymmetrical and eccentrically loaded parts that must necessarily flex with each application of load. In many such instances, the secondary flexing of the part may safely be ignored in designing for static loads, but this procedure cannot be defended in the case of designing for fatigue. The best procedure is to eliminate the undesirable secondary flexing of the member, but where this is impossible the extra stress produced should be evaluated and taken into account in designing for fatigue.

Provision of additional material to increase the stiffness of the part exhibiting secondary bending will generally result in fatigue strength improvement, except where the additional material introduces severe stress concentrations as a result of abrupt changes in area, or where the degree of flexing is practically constant regardless of the amount of stiffening material added. In the latter two cases, the added material usually does more harm than good.

The most important source of fatigue difficulty is the joints and connections in an assembly. Joints carefully bonded with adhesives and free from the more obvious discontinuities found in riveted, bolted, and welded connections, still involve stress concentrations that make the joints more susceptible to fatigue failure than the surrounding material.

#### **Redundant structures safer**

A redundant structure, with its multiple load paths, when inspected adequately and regularly, may prove better suited to early detection and repair of fatigue cracks than a structure of comparable static strength in which cracks in any one of several key members might precipitate sudden collapse of the whole. Non-redundant structure may be more likely to produce complete collapse before there has been an opportunity to detect and repair the damage. Neither type of structure is likely to survive severe service loadings after a fatigue crack is well developed in some important member.

While the design of a structure is probably the most important single item in assuring freedom from fatigue difficulties, the importance of fabrication should not be overlooked. If fabricators recognize the importance of smooth transitions and generous fillets and the harmful effects of sharp re-entrant corners and notches, they will be particularly careful not to spoil a good design. Careful and conscientious attention to surface finishes, freedom from severe notches, looseness, and similar features will go a long way toward insuring good performance of the finished assembly.

In the presence of all the usual stress raisers such as rivet holes, welds, and re-entrant corners, any beneficial effects from extreme care in surface finish and freedom from minor blemishes are completely overshadowed. Exceptions

might be made in the case of highly critical machine parts and structural parts of marginal strength, but there is little reason to go to extremes on most parts of a riveted or welded assembly.

Considerable attention has been given to special techniques that can be used to improve fatigue resistance through some form of cold-working which sets up compressive residual stresses in the surface layers. There is no question of the beneficial effects of such treatments when properly carried out, but care should always be taken to avoid an excessive amount of such localized cold working.

#### Reduce variable stress

Other techniques are available for improving the fatigue characteristics of parts by setting up favorable residual stresses or otherwise altering the stress conditions. Anything that reduces the variable stress, without raising the peak tensile stress, will have a beneficial influence on fatigue life. If the peak tensile stress is lowered at the same time that the variable stress is reduced, the benefits are even greater.

Sometimes an extreme reduction in variable stress can prove beneficial even though the peak tensile stress is slightly increased. Here the re-

duction is variable stress, not the increase in peak stress, is important. One example in this general field is the proper tightening of bolts carrying tension, so that repeated loadings produce only a small fluctuation in tensile stress in the bolt.

#### Residuals do not affect fatigue

Most metal products have some degree of residual stress over which the designer has no control. These initial residual stresses come about by virtue of operations performed by the material produced. Each subsequent operation merely modifies the residual stresses already present, so that without a special investigation it is impossible to evaluate accurately the final residual stress resulting after any specific operation performed on a given piece of metal. What little information is available indicates residual stresses of the type induced by the normal heat-treating and forming operations are not extremely important in governing the fatigue life of a part.

#### References

"Prevention of the Failure of Metals Under Repeated Stress," by Battelle Memorial Institute (1941).

"Manual on Fatigue Testing," by Committee E-9 of the American Society for Testing Materials (Special Technical Publication No. 91), (1949).

## Packaging method

### CUTS COST, SAVES SPACE

A novel method of packaging liquids, recently introduced in Europe, offers unusual savings in materials, labor and shipping space. While now used only for packaging liquids in paper containers, the method could be applied to the canning industry.

Introduced by AB. Tetra Pak, Lund, Sweden, the method and containers are being used for packaging milk. Waste space between shipping containers is practically eliminated. The tetrahedon containers are packed in hexagonal shipping container for transport.

A roll of plastic coated paper is loaded into a machine which forms, fills and seals the container. The paper is first formed into a tube and a longitudinal (vertical) seam heat sealed.

The tube, moving down through the machine, is pressed together by pairs of heat sealing jaws mounted on an endless chain. After the first horizontal seal, liquid fills above the point where the next horizontal seal will be made.

The method of filling prevents foaming and permits use of the method with more viscous liquids such as oil or ice cream.

Sealing jaws, operating at 1 ton pressure, form the horizontal seals. The electrically heated jaws are thermostatically controlled. Pressure of the jaws excludes liquid from the seal. The filled containers form a chain of tetrahedons which are cut apart by an automatic knife. These packed in a hexagonal shipping unit, completely fill the shipping container.

The machine, described in a recent issue of *Sheet Metal Industries*, is driven by a 2 hp motor. Filling pipe and tube forming unit are easily removed for sterilization. The paper, sterilized during manufacture, is again heat sterilized as it is formed into a tube by electric elements inside the tube.

Savings to 75 pct in floor space, 65 pct in paper, and 75 pct in labor over other methods of packaging milk in paper containers are claimed.





## ECONOMY, SPEED,

### The show . . .

**A** \$500,000 fire in a section of the exhibition hall and a highly controversial technical paper enlivened the 26th Annual Tool Engineers meeting in Chicago last week.

Over 11,000 members, guests and visitors of ASTE attended each of the five day-long sessions to inspect the \$20 million worth of the latest and best machine tools, gages and tooling methods assembled at the International Amphitheatre.

Foreign machines from Germany, Belgium, England and Switzerland stole some of the lime-

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*See News Section for photo and story of exhibition hall fire.*

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light. On-the-spot sale of all types of machines was heavy. Total registration at the show was about 25,000. Special buses shuttled members to 21 different plants in the area. These plant tours were exceptionally well attended.

Over 450 separate exhibits ranging from large presses weighing tons to precision tolerance gages and parts as light as a few ounces were featured. Some of the outstanding equipment was found in Precision Control Hall. Contour Projection Gaging machines at the Eastman Kodak Booth attracted wide attention. The advantages of optical gaging over mechanical gaging on certain jobs were demonstrated.

Using an Ordnance rotor booster part as an example, the Eastman Kodak Optical gages cut part inspection time from 4 min to 4 sec, replaced 27 different mechanical gages. Through the use of an "optical bridge" an operator detects at a glance a part size variation of as little as 0.0001 in. Four types of staging fixtures are combined to produce utmost flexibility and adaptation of these optical gages.

Unfortunately, a Tuesday night fire wrecked the Eastman Kodak booth and six of the large machines. Fourteen other booths in the same area were damaged. The Taft-Peirce Mfg. Co. booth was a total loss estimated at about \$200,000 worth of precision tool room air gages, power-driven thread gages, magnetic chucks and similar equipment.

Another precision gage machine of high interest was a jet blade testing machine made by Sheffield Corp. This machine simultaneously checks 18 different points on the contour of the jet blade or bucket to a tolerance of 0.0025 in. on internal points and 0.0075 on external points. The operator can read the Precisionaire Airchart at a glance and the air gaging is done as fast as the blades can be loaded and unloaded into the machine.

A portable, fully universal drill which can drill, in any position, holes up to 2 in. diam, and



# AND INGENUITY MARK TOOL SHOW

rotates 360° in any plane was demonstrated. This drill, weighing 9000 lb, is built by Asquith Co., an English firm, and marketed by Tri-State Machinery Co., Pittsburgh.

At another booth unground hobs developed by Michigan Tool Co. were displayed. A saving of 33 pct was claimed for this new "Michigan Process," featuring high speed metal removal at low tool cost.

Precision Detroit Co. exhibited a new index table and press feed designed for simple and fast assembly, staking, marking, riveting, pressing and forming of small parts. The index table has a positive Geneva motion and variable speed drive.

Another mechanism very well received was the Feedomatic Press, exhibited by the V. & O. Press Co. Div., The Emhart Mfg. Co. This punch press has increased production from 50 to 200 pct at lower cost, better safety and less

operator fatigue. With each stroke of the press a mechanical hand picks up the part and carries it to the next die station. Flat parts weighing up to 2 lb can be handled by this automatic vacuum pickup hand.

A unique turret lathe was shown at the Kurt Orban, Inc., booth. This German-built Gilde-meister is a turret lathe with 16 tools mounted on a vertical disc. The lathe features a wide range of speeds, which may be preselected for each index position.

Merz Engineering, Inc., featured electronic sorting and gaging machines. One machine at this booth, built for Ford Motor Co., gaged 3600 tappets per hr. The machine checked squareness, taper, roundness and size (diameter) of the tappets. A contact sorter which segregated electrical contact points at the rate of 10,000 per hr into oversize, undersize and on-size bins was also operating at this exhibit.

## *The people . . .*

People who made news at the meeting included: Richard Harold—claimed Croning patent applications shakey . . . K. R. Blake—offered controversial new machining theory . . . Defense Mobilizer C. E. Wilson—couldn't attend: steel labor trouble . . . staffs of damaged booths—bounced back fast from fire disasters . . . J. J.

Demuth and H. D. Long—sparked biggest and best ASTE exhibition ever . . . bearded citizens of Rockford, Ill.—groomed for Centennial celebration.

New officers of American Society of Tool Engineers: President, L. B. Bellamy, Sterling Grinding Div., Cleveland Quarries Co.; vice-



NEW OFFICERS of ASTE, left to right: G. A. Rogers, R. F. Waindle, L. B. Bellamy, J. T. Crosby, H. E. Collins, and H. B. Osborn. Behind Crosby is H. E. Conrad.

president, R. F. Waindle, Nugent-Sand Co., Inc.; 2nd vice-president, J. T. Crosby, La Point Machine Co.; 3rd vice-president, H. B. Osborn, Jr., Tocco Div., Ohio Crankshaft Co.; secretary, H.

E. Collins, Hughes Tool Co.; treasurer, H. C. McMillen, Philco Corp.; assistant secretary-treasurer, G. A. Rogers, Rudel Machinery Co., Ltd.; H. E. Conrad, re-elected executive secretary.

## ... and topnotch technical papers

Among the 40 technical papers presented, most attention was attracted to "Dynamomics, a New Concept in Metal Removal" by K. R. Blake, Metalloid Corp. The paper outlined Mr. Blake's theory on the causes of various effects noted in machining. It is the author's thesis that the internal energy relationship of atoms in metal crystals is the determining factor in machinability.

The paper gave a new concept of the function of coolants in terms of this theory. Mr. Blake held that coolants disassociate during cutting, releasing atoms which impregnate the surface of the metal being deformed by the cutting action. This increases the free energy of the crystals and thus reduces the energy the tool must supply to remove the metal.

This theory was sharply attacked in two prepared discussions. Discussion pointed out that the theory ignored the work done along the shear plane. Mr. Blake's belief that the function of coolant is *not* cooling and lubrication was challenged. A third prepared discussion lauded the paper as the first to stimulate thought on fundamental theory of machining.

Current interest in electro-mechanical machining was stimulated by M. F. Judkins, Firth

Sterling Steel & Carbide Corp. Though the method is now somewhat slow, Mr. Judkins said that mathematical analysis indicates present penetration rates are only 1 or 2 pct of theoretical possibility, so much improvement can be expected. As an example of current costs, the author cited a  $\frac{1}{4}$ -20 thread in carbide. This would cost \$20 to \$25, including making the electrodes.

A challenge to makers and users of multiple-spindle automatic screw machines was made by C. R. Morgan, Cone Automatic Machine Co. Improved drilling and tapping tools now make possible full utilization of carbides on these machines. Machine capacity increases of 10 to 20 times, and tool life in the thousands of pieces, are possible. But, the author warned, improvements in machine design, tool design, loading and chip disposal methods, and other factors, are necessary.

Photoelectric equipment for graduating measuring machine scales was described by Jaques de Saugy, Societe Genevoise D'Instruments De Physique (SIP), Switzerland. A photoelectric microscope scans the master scale and stops its travel for every successive coincidence of one of its divisions with a fixed index. Operation is automatic, and the copies have an error of only a few hundred-thousandths of an inch. A photoelectric comparator has been devised for inspecting the scales thus produced.

A report on shell molding by Richard Herold, The Borden Co., brought out recent developments in the process (THE IRON AGE, March 20, 1952, p. 62).

Other papers of particular interest included "Contour Milling of Sheet Stock," by Jesse Daugherty, Giddings & Lewis Machine Tool Co.; "Precision Hold Location Methods," by F. C. Victory, Moore Special Tool Co.; and "Tool Engineers and Electroforming," by Faust and Sapanek, Battelle Memorial Institute. J. D. Graham, International Harvester Co., discussed heat treatment and machining of boron steels. R. E. Gay, Bristol Brass Corp., and John Gailard, American Standards Association, read papers on standards. The program also featured panel discussions on tolerances, drilling, stamping, finish grinding, and machine drives and controls.



BUSY BOOTH was Metalloid Corp. demonstration of new tool grinding method. Special machine and special fluid grinds carbide tools, both tip and shank, at 10,000 rpm using standard abrasive wheel instead of diamond wheel.



## Ultrasonics make soldering EASIER

**U**ltrasonic vibrations, harnessed in simple gun or bath-type equipment, are being used to speed and improve metal soldering operations. The method, developed in England, is effective with metals such as aluminum which have chemically inactive oxides and are difficult to solder using ordinary flux methods.

In soldering, metals are joined through use of a lower melting point metal. The soldering process obtains a "wetting" or flow of solder over the metal surface. The joint results when two such surfaces flow together. Joint strength is mainly dependent on strength of the solder alloys. Soldering metals include tin, lead, zinc, cadmium, copper and combinations of these. Melting points range from 176° to 932°F.

Wetting of a metal generally depends on surface finish. The surface must be clean and free of grease or oxide film. A flux normally performs this function by dissolving or inhibiting the oxide. The flux must remain active at soldering temperatures as new oxides form. With copper and iron, this can be done easily with weak acid, alkaline, or resin fluxes. Metals such as aluminum cannot be treated in this manner owing to chemical inactivity of their oxides.

Application of ultrasonic vibrations to metallic surfaces produces a surface erosion. By implosion, small gaseous pockets are formed within the molten solder. Implosion pressures produce a disrupting effect on the oxide. Results are similar to those obtained with a wire brush

but with far better surface coverage. Cavitation intensities increase at the lower frequency end of the ultrasonic spectrum.

Choice of frequency is also governed by the nuisance value of the ultrasonic sound wave. It has been found that 20,000 cycles per sec is high enough to be inaudible to most human ears and at the same time will readily induce cavitation.

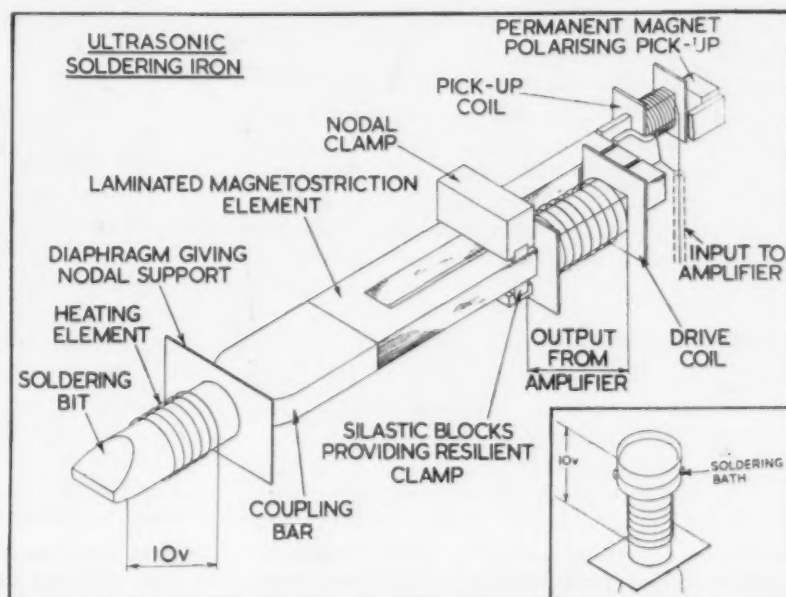
Ultrasonic power is generated by magnetostriction transducers. The magnetostriction effect is a change in the physical dimensions of a material subjected to a magnetic field and is noted in many ferro-magnetic materials.

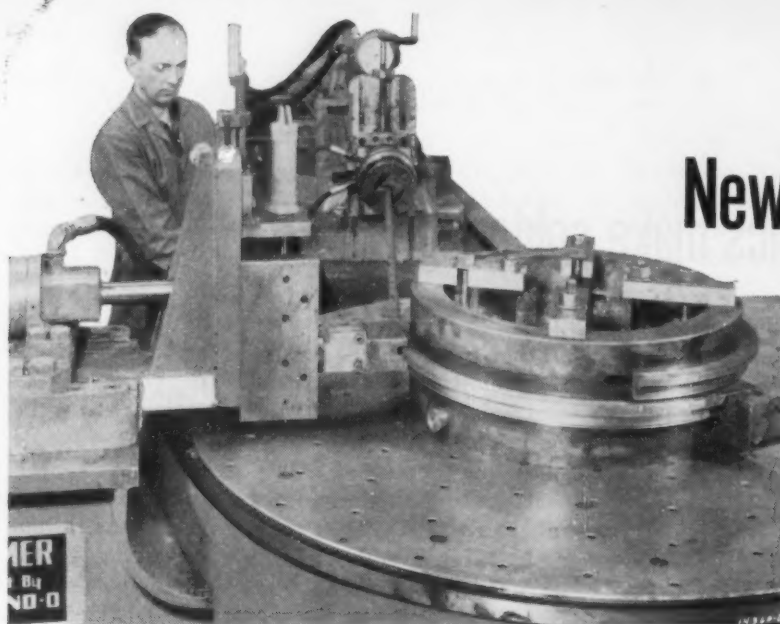
The ultrasonic soldering iron and tinning bath were recently introduced by Mullard, Ltd., of England. The soldering iron bit is vibrated at a very high frequency. When the bit is covered with molten solder and applied to a surface, the erosion action occurs through the medium of the solder. If the metal can be tinned, the surface oxide will be abraded away and wetting action will occur.

The tinning bath operates in the same way, the vibrations being applied to the bottom of the bath and producing the implosions throughout the molten solder. Workpieces dipped into the bath are subjected to the eroding action and wetting or tinning results.

Equipment consists of a soldering iron and a transformer power unit. The pistol-type soldering iron has a chisel-edge nickel-silver bit  $\frac{5}{8}$  in. in diam. This is heated by a low voltage resistance winding.

LAMINATED magnetostriction element converts electrical energy from power unit into vibratory mechanical energy. Insert shows bath mounted on vertical soldering unit for soldering very small or complex assemblies.





## New machine FORMS JET RINGS

CLOSEUP of table, dies, and side shoe. Material is held in tension between jaw at right and jaw in background, then wrapped around die by turning table. Die, of 1045 steel, was made as straight bar, then wrapped around the cast Meehanite center cylinder by the radial draw forming machine itself.

Jet engines require many rings of various sizes and shapes. Many of these have been produced by machining from solid discs. This new machine forms rings by taking partially pre-formed strip, sheet, or plate, putting it in tension between two jaws, then wrapping it around a die. Little or no finish machining is required. Varied shapes may be formed.

One of the most significant aspects of the jet engine program, from a tooling standpoint, is the large number of ring shapes required. Ring shapes occur in various cross-sections, sizes, and materials, in many parts of a jet engine. Manufacturing capacity for ring shapes has had to be greatly expanded to take care of the jet engine program. A large demand has thus been created for ring turning equipment, and special large-swing, short-bed lathes have been designed for the purpose.

A new tool has been announced which will greatly reduce machining on various sizes of rings, or eliminate machine in some cases. Designed and built by the Cyril Bath Machinery Co., the machine is called a radial draw former. Shapes can be drawn to a full circle, cut, and welded, keeping required tolerance without re-stretching.

### Handles varied materials

Materials handled so far include aluminum and bronze extrusions, titanium, Stellite, and various stainless steels.

So far the machine has been used to form some 25 different shapes for jet engine afterburners. Shapes include afterburner fronts, mounts, ducts and cones. A wide variety of other shapes for jets are being investigated for radial draw form-

ing. These can be economically turned to size with a very light cut after forming, instead of being cut from solid material as is usually the case today. The saving in time and reduction of loss of material in chips is obviously great.

The draw former is similar to the Bath Co.'s universal contour former. The principal differences are that it is equipped with a side head for applying pressure by rolls or shoe to the work as it is being stretched around the forming block. It also differs in that the bed on which the stretch head travels is longer, and motion to the carriage is supplied by hydraulic control.

### Keeps cross-section accurate

The side head is needed to help maintain an accurate cross section in the materials being stretched. It also reduces the percentage of stretch needed. The long head travel is needed because shapes which are complete circles, rectangular, or combination, need a longer stroke. In a long, sweeping bend, such as handled on the contour former, the material is set largely by the longitudinal stretch cylinder. But in the new machine stretching is principally in the radial direction, outward as compelled by the die shape.

The machine consists of a power driven rotary steel table similar to that of a vertical boring mill. On this are mounted dies or forms to pro-

duce required shapes. A horizontal bed carries a hydraulically movable carriage. On the carriage is mounted a swivellable ram, operated by a hydraulic cylinder. On the ram face of the stretch cylinder is mounted one of two adjustable stretch jaws that grip the work. The other jaw is mounted on the rotating table, sometimes attached to the die. The work is stretched between them. Sometimes when spiral work is done, it is necessary to move the head vertically on the stretch head ram face, and on the table shape face. The tool is so designed that any such apparently off-center loads are provided for in the swivellable ram.

The work, having been previously shaped roughly to the required cross section, is gripped by the jaws. The metal is then stretched between the jaws. This stretch differs with different work but is generally intended to produce a tension on the work while forming. It might be compared to the hold-down function in a conventional press operation. After the metal is stretched between the jaws, pressure is automatically held regardless of the direction taken by the stretch cylinder. The revolving table causes the metal to be radially stretched or drawn over the outer diameters of the shape mounted upon the table, the amount of draw becoming progressively less toward the inner diameter where very little elongation takes place.

Full 360° work can be stretch formed in spiral shape where the finished job is not too wide, and upon completion can be sprung together. Any

minor variation in cross section shape occasioned by this process is in thousandths of an inch and can be compensated for if necessary in the dies.

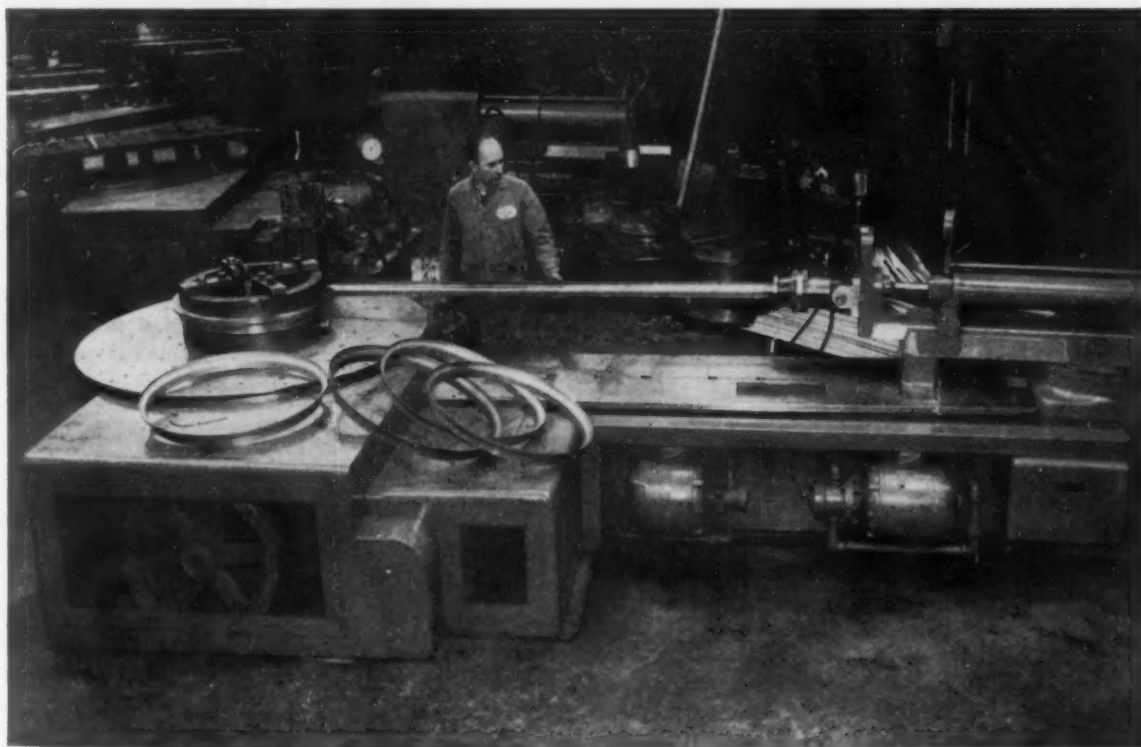
Full 360° work in wide elements, such as sheet or plate, often cannot be conveniently rolled because of wastage in cutting a tapered form out of a sheet, or because of variations in shapes which present problems. These can be stretch formed with an inside jaw and an outside overlap. In this case the form is stretched over itself for a short distance and then the metal trimmed from both ends.

#### **Produces other shapes too**

The machine will also produce elliptical, rectangular, or combination shapes. It will produce long, sweeping, open curved shapes; shapes containing reverse bends; or curves in two planes. It will vary the angularity of the part being formed, as well. It will form round, square, or other hollow tube shapes. The pull of the ram is balanced hydraulically so that very light work which would otherwise break by the weight of the ram and the resistance of the oil can be handled.

Dies may be made of cast iron, welded steel, hardwood, Masonite, or plastic. The dies cost less than press dies.

The Cyril Bath Co.'s standard contour forming machines can be converted to radial draw formers by the addition of self-contained supplementary units.



**RADIAL DRAW FORMER** in action, making jet engine afterburner shields. Other shapes, such as rectangles and cones can also be drawn. Materials handled include high alloy jet engine steels, titanium, aluminum, and bronze.



# New method tested for CLADDING BULLET JACKETS

By Sam Tour

Sam Tour & Co.  
New York, N. Y.

Ordnance is again using some clad steels in small arms ammunition. A new method for cladding copper to steel has been tested but is not yet in commercial production. Molten copper or gilding metal is poured onto a steel slab with the aid of a methyl borate flux. Welded-on side walls hold the metal on the steel slab until it solidifies. Then the composite is rolled out. Tests indicate an excellent bond between the two metals.

**B**ecause of the acute shortage of copper, bullet jackets for small arms ammunition are again being made of gilding metal clad steel. During World War II the copper shortage led to the use of a clad steel jacket (20 pct gilding metal, 80 pct steel).

The type used in considerable tonnages during World War II was clad on both sides with a layer equivalent to 5 pct of the total thickness on one side and 15 pct on the other.<sup>1</sup> (Fig. 1.) According to military specifications the 5 pct inside layer was required to save wear on punches and prevent corrosion during fabrication of the jackets. There is now some question as to the necessity of the 5 pct inner layer; there is good reason to believe that a two-layer sandwich could be used instead of a three-layer sandwich.

Several companies are now manufacturing clad metals in various combinations of carbon steel, stainless steel, Inconel, Monel, and copper.<sup>2</sup> Four different methods are used.

*Soldering method:* A thin layer of solder material is placed between the steel and the cladding metal and the combination heated to melt the solder to join the two together. After soldering, the composite is rolled. This method is used for rolled gold plate and for some thermostatic metals. The solder layer

is the weak point. It is not suitable for copper or gilding metal on steel.

*Electroplate bonding:* After the steel is electroplated with a bonding metal the cladding metal is placed on the surface and the entire composite heated and hot rolled. This is the process used for nickel cladding, Inconel cladding and stainless steel cladding of steel. It has not proved practical for copper or gilding metal cladding of steel.

*Casting method:* One of the metals in the desired composite is used as a part of the mold and the other metal in molten condition

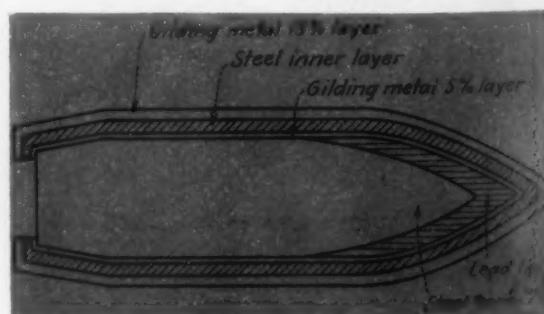


FIG. 1—Schematic cross section of a bullet with jacket of gilding metal clad steel. This is the type widely used during World War II and now going into production again.

is cast in place against it. Although satisfactory for making copper clad steel wire and some copper clad sheet it cannot be used with gilding metal due to the zinc fumes which arise during casting.

**Sandwich hot rolling:** Used during World War II and again today for gilding metal clad steel. A plate of steel is assembled with a plate of gilding metal; the assembly is heated and hot rolled for the purpose of bonding the two metals together.

A fifth method, one so far not used commercially, is the *fusion-flux* method. In this technique, a flux is deposited on the surface of the steel and copper or gilding metal is fused to the surface so fluxed.

#### Flux can be carried by any fuel

The Gasflux process<sup>3</sup> for cladding steel is a fusion-flux process developed by W. L. Ulmer of Automatic Gasflux Co., Cleveland. It was extensively experimentally tested during World War II. Experimental work on this new material was started by Col. R. R. Studler, Office of the Chief of Ordnance, War Dept., who worked with it on 50 caliber bullet jackets.

A great deal of the success in the experimental work on these jackets was the result of the perseverance of Col. G. A. Miller and of V. W. Walters of Frankford Arsenal where cups supplied by Mr. Ulmer were fabricated into bullet jackets and assembled into ammunition.

In the Gasflux process, a steel slab with a scale-free surface on the top is prepared by welding strip around its edges to provide retaining walls to receive molten copper or gilding metal. Or the walls can be rolled into the slab. The slab surface to receive the cladding metal is then treated by the Gasflux process. Any fuel gas may be used—city gas, acetylene or natural gas—to carry the flux. The fluxing reagent, Gasflux is (a methyl borate compound) fed into the gas stream. When applied to the steel surface through a neutral gas flame, the result is a thin deposited film of boric acid, a well known flux for brazing operation. The cold-fluxed slab is then placed in a heating furnace and brought up to approximately 1200°F. After the slab is taken out of the furnace molten copper or gilding metal is poured on its surface to fill the space provided by the retaining walls. Gasflux is again used at this stage, to flux the steel surface at the steel-copper interface.

The composite slab then goes into a reheating furnace where the temperature is brought up to a few degrees above the melting point of the copper or gilding metal. This is to smooth out the copper surface and to insure complete bonding of the two metals. This reheating period lasts for only a few minutes—no prolonged soaking time is required. During this time iron migrates from the steel into the copper.

The reheated slab is then brought out of the furnace and the assembly is allowed to cool.

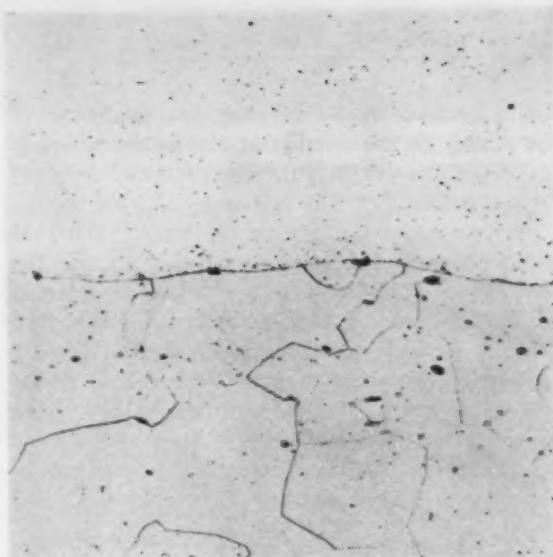


FIG. 2—Representative photograph showing bond between steel (bottom) and gilding metal in cups for 50 caliber bullet jackets. Note dispersion of iron in the nonferrous metal at top. The clad metal was etched in  $\text{NH}_4\text{OH}-\text{H}_2\text{O}_2$  and the steel in 4 pct nital. The magnification is 500X.

When the welded-on or rolled-in retaining walls have been removed by planing or shaping and the slab is ready for rolling to sheet or strip, the composite slab is heated to a temperature of 1600° to 1700°F and hot-rolled to the desired thickness. From this point on, fabricating procedures are substantially the same as with composite material made by the sandwich-rolling process. Steel of almost any size or thickness may be clad, the thickness of the slab depending on the size and power of the rolling mill. Percentage of thickness of the cladding metal can be varied from about 10 pct upward. The bond between the two metals is shown in Fig. 2.

#### No large particles of free iron

Because the nonferrous metal is molten, some iron is dissolved by the copper-base alloy. The resultant iron content may be as high as 1 to 2 pct. Metallographic examination (Fig. 2) of the product shows the iron thoroughly dispersed in a uniform finely divided manner without the presence of large particles of free iron which might have an excessive erosive action on the gun barrel.

The Gasflux process is limited to the production of material clad on one side only; it produces a two-layer rather than a three-layer sandwich. However, tests indicate that this material can be used for bullet jackets and that production costs will be relatively low.

Little information is available as to why 5 pct gilding metal was originally specified for the inside of the bullet jackets. From the standpoint of copper conservation, it would have been better to have less than 5 pct on the inside. From the standpoint of reduced wear in gun barrels, it

### Copper clad bullet jackets (continued)

would seem desirable to have practically all of the copper on the outside of the jacket where it performs the useful function of being grooved by the rifling in the barrel so as to give the desired rotational velocity to the bullet. Whether excessive wear and tear on punches during the fabrication of bullet jackets requires an internal coating of such substantial thickness is doubtful. In fact, a considerable amount of work done in connection with the making of steel cartridge cases for small arms ammunition is conclusive that either a thin copper flash such as obtained by a chemical dip or a chemical treatment of phosphating is all that is really necessary.

### Contamination of clad alloy studied

Both Cols. Studler and Miller realized that scrap loss in the production of clad metals must be held to a minimum. Also, they recognized the problem involved in the use of the Gasflux process. Could the inner cladding be dispensed with? Would the iron content of the gilding metal applied by the Gasflux process cause excessive gun erosion or wear? Would it be necessary to use a lower zinc content gilding metal when applied by this process than when used in the sandwich rolling process? Could the low limit of 0.05-pct iron content in the cladding material be waived? To find the answers to these problems, Colonel Studler initiated the program and Colonel Miller directed the final work. The fabrication operations for a caliber 50 bullet jacket are more severe

than those for a caliber 30 bullet jacket. The caliber 50 size was selected for this work.

Considerable experimental work at Frankford Arsenal under the direction of Colonel Miller with supervision, Mr. Walters indicated that no difficulties in fabrication need be encountered prior to the third drawing operation. A Cuprodine treatment after the third drawing operation was enough to eliminate sticking to the punches in the fourth draw and in final assembly. The conclusion of this work was that the various manufacturing difficulties that had been encountered were such as could be easily eliminated in regular production and were not to be considered important in connection with the suitability of this type of clad material for bullet jackets.

Subsequent firing of the caliber 50 ammunition made with this material indicated that the copper, the gilding metal and the intermediate alloy of 95 pct copper 5 pct zinc all performed satisfactorily in the gun. Wherever gilding metal clad bullet jackets have been used successfully for small arms ammunition, the Gasflux process product seems to the writer to be fully acceptable. Insufficient work has been done to determine whether the cladding alloy should be pure copper, 95 pct copper 5 pct zinc or 90 pct copper 10 pct zinc. The work has shown that the iron content of the cladding alloy is not harmful.

### References

- <sup>1</sup> THE IRON AGE, Feb. 18, 1943, p. 54; Apr. 29, 1943, p. 41; Jan. 14, 1943, p. 33; Apr. 16, 1942, p. 56; Mar. 6, 1941, p. 35.
- <sup>2</sup> THE IRON AGE, Dec. 11, 1947, p. 137.
- <sup>3</sup> Patented under U. S. patents Nos. 2,253,526, 2,255,076, 2,277,654, 3,61,695, 2,277,064, 2,281,910 and 2,223,456.

## Big press makes PLASTIC DOOR LINER

**T**he world's largest injection molded part, a refrigerator door liner, is dwarfed beside the huge 300 oz Watson-Stillman injection molding machine in which the part was made. The liner weighs 7.4 oz and has a projected surface of 1240 sq in.

Made of polystyrene, the door liner is complete with molded-in shelves, butter compartment and egg racks. It is produced by Amos Molded Plastics of Edinburg, Ind., for the Admiral Corp. Amos engineers envision washing machine tubs, furniture and office units from the big press in the future.

The plastic door liner will conserve steel, titanium, cobalt and other critical materials used in production of porcelain enameled steel. Greater acid resistance, reduction of overall weight, economies in assembly, and better insulating qualities are claimed for the liner.

The 6-ton mold which forms the doorliners took several months to make. The mold, nearly

5 ft wide is 38 in. high and 22 in. deep. Several tool makers worked on the mold simultaneously.



REFRIGERATOR DOOR LINER is produced in single shot on this 300 oz Watson-Stillman injection molding press.

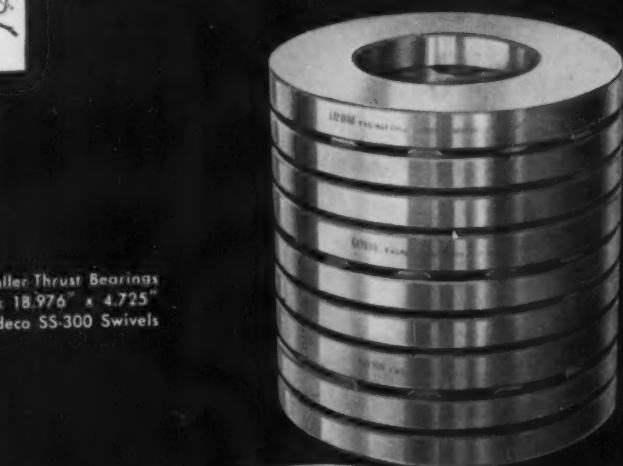




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FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER

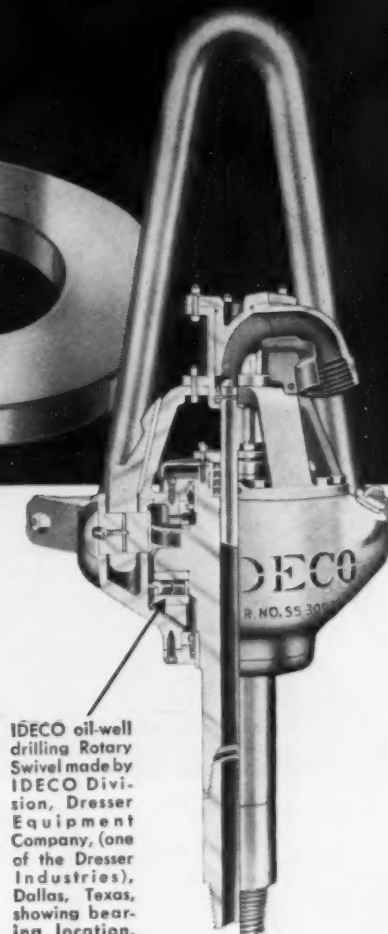
KAYDON Roller Thrust Bearings  
10.630" x 18.976" x 4.725"  
used in Ideco SS-300 Swivels



## Takes 300-ton loads!

Dead-load capacities to 300 tons have been obtained, without added weight, in IDECO Streamlined Swivels for deep oil-well drilling. The success of these rotary swivels is the result of advanced engineering and years of experience in swivel manufacture. Rugged bearings are vital . . . husky KAYDON heavy-duty roller thrust bearings carry the full load.

In many other industries, machine designers find KAYDON bearings help make bigger machines possible, without unnecessary bulk and weight. If you have a bearing problem, contact KAYDON of Muskegon.



IDECO oil-well drilling Rotary Swivel made by IDECO Division, Dresser Equipment Company, (one of the Dresser Industries), Dallas, Texas, showing bearing location.

**THE KAYDON ENGINEERING CORP.**

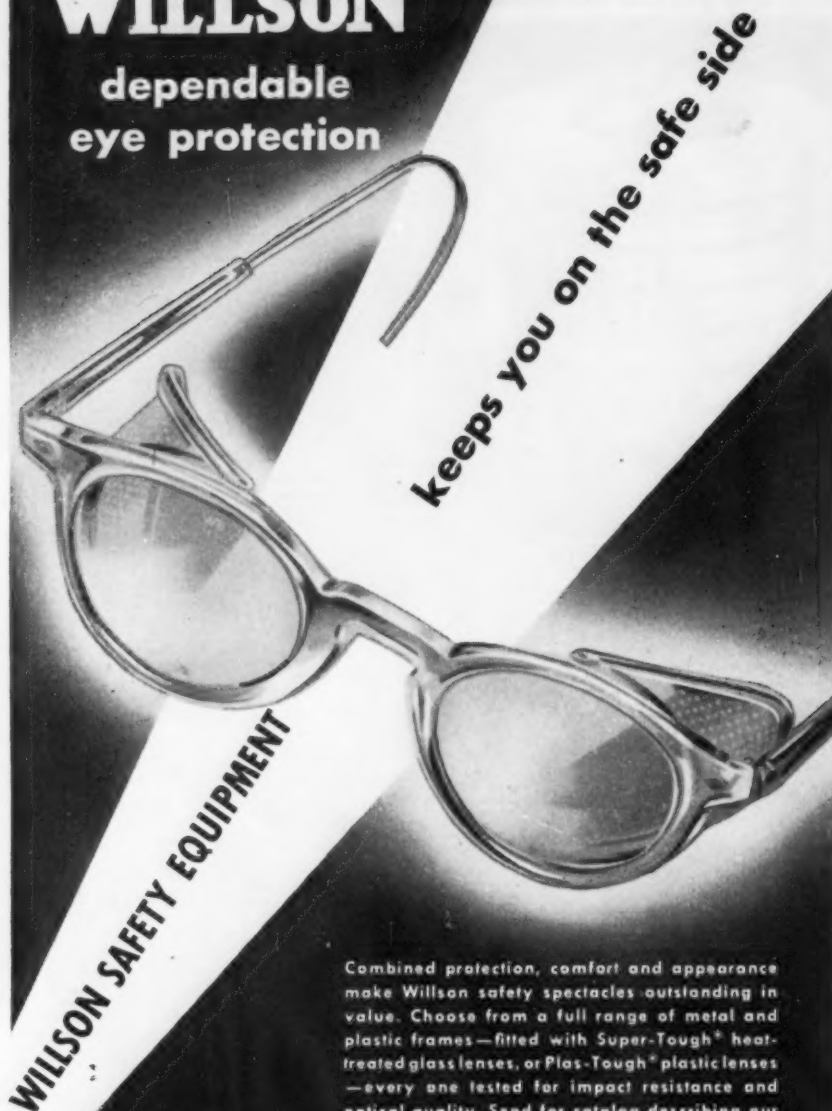
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**PRECISION BALL AND ROLLER BEARINGS**

March 27, 1952

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**Free Publications**  
Continued

**Fluid power**

"The Circuit Rider," a new 28-p. booklet, presents a discussion of basic designs in fluid power circuits. Engineers and draftsmen will find the manual useful. Standard symbols for air and hydraulic circuits are pictured. These include circuits for the regulation of cylinder speed by flow control valves, sequence operation of two air cylinders, a safety circuit for air presses are described. *Logansport Machine Co., Inc.*

For free copy insert No. 15 on postcard, p. 117

**Sleeve protection**

Gortite-sleeve protection for all operating equipment is described in a new bulletin. Applications are listed for protectors as large as 24 in. in diam and 30 ft long. All sleeves and boots are fabricated from neoprene material that is impervious to flying chips, oil, grease and water. The sleeves withstand temperatures within a range of -45°F to 220°F without cracking. *A & A Mfg. Co.*

For free copy insert No. 16 on postcard, p. 117

**Balancing**

Design and methods engineers will be interested in "Static and Dynamic Balancing," a reprint of Section 89 from the first edition of the Tool Engineers Hand Book. The need and causes of balance and the kinds of unbalance are discussed. Methods of measuring balance, types of balancing machines, and factors to consider in drawing specifications for balance are a few of the items discussed. *Gisholt Machine Co.*

For free copy insert No. 17 on postcard, p. 117

**Screw products**

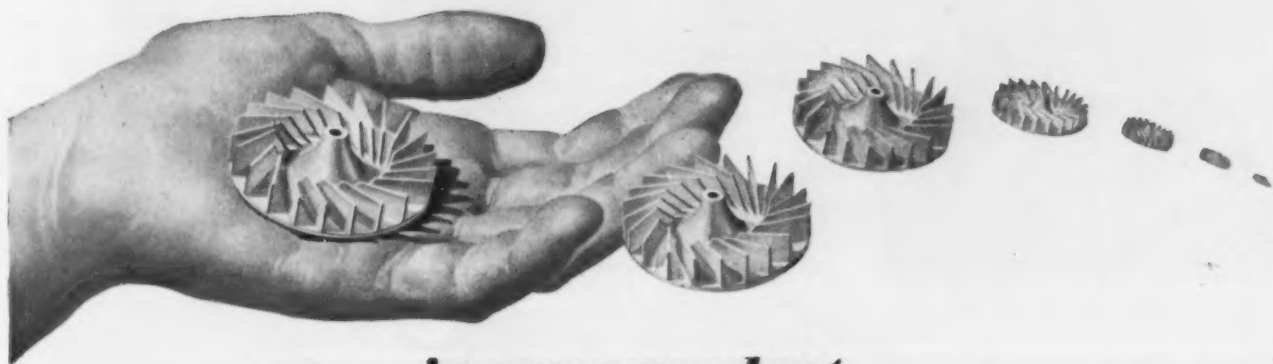
A series of folders have been issued describing Unbrako screw products. Foremost is a 12-p. bulletin which displays in color all the standard sizes available including socket head cap screws, self-locking socket set screws with knurled cup point, and other widely used items. Other folders describe Hallowell steel tool stands, cabinet benches and industrial tables. *Standard Pressed Steel Co.*

For free copy insert No. 18 on postcard, p. 117

# MAGNESIUM

*and the  
problem of*

## FABRICATION



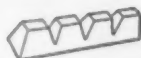
*in your product*

Today American industry is constantly searching for ways to lighten the unprecedented load on its production facilities. Progressive manufacturers have discovered that magnesium . . . with its combination of lightness, strength and workability . . . is one answer. These characteristics of magnesium can result in simplified design, speedier fabrication and lowered production costs.

Manufacturers find that magnesium is produced in all common forms including castings, forgings, extrusions and sheet. They learn that it can be machined at

the highest possible speeds of standard machine tools . . . can be formed by drawing, spinning, bending, stretching and other common production methods. Also that the metal is joined by arc, gas, and spot welding as well as by riveting and is finished by accepted methods.

So if you are making, or contemplate making, anything in which lightness or ease of fabrication is important, plan with magnesium. It has made many products better—more versatile, easier to handle, more profitable to sell—it may improve yours.



*For Your "Tomorrow's" Product . . .*

Today, magnesium is a tremendously important part of our defense effort, and like many other metals, is required in great quantities by the government. But in planning "Tomorrow's" production, remember this fact: the seas, at our own shores can provide 100 million tons of magnesium per year for 1,000,000 years without significantly reducing the supply!

**THE DOW CHEMICAL COMPANY**  
Magnesium Department • Midland, Michigan

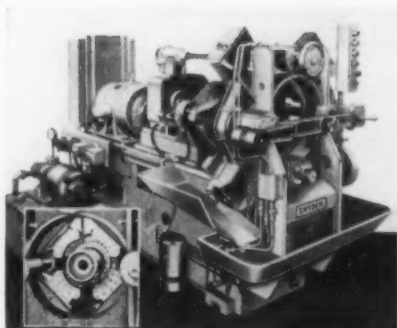
New York • Boston • Philadelphia • Atlanta • Cleveland • Detroit • Chicago • St. Louis • Houston  
San Francisco • Los Angeles • Seattle • Dow Chemical of Canada, Limited, Toronto, Canada





# NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 117 or 118.



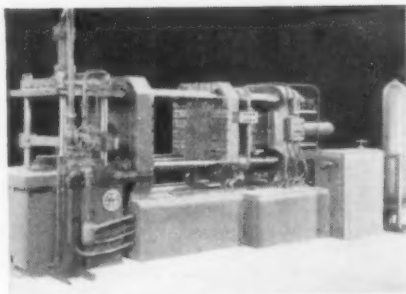
## Machine backspotfaces aircraft cylinder heads

Special-purpose, high production machine backspotfaces 20 cylinder mounting holes in cylinder barrels and head assembly for radial aircraft engines. Operation is performed after the head has been assembled to the cylinder barrel. Cutters are mounted in four radially moving segments each con-

taining five cutters which form a circle when cutters are moved into working position. Segments are hydraulically actuated. When the work cycle starting button is pressed, the fixture with the part feeds into the cutters until the cut is completed.

*Snyder Tool & Engineering Co.*

For more data insert No. 19 on postcard, p. 117

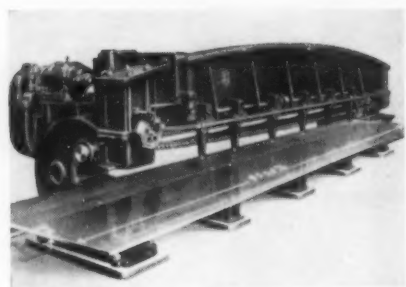


## Major improvements increase production

Incorporating two Lake Erie features, the Wedge Cam Toggle and the Pressure-Pac, new diecasting machines are said to set new standards in hourly production and finished casting costs. The wedge cam toggle is a self-compensating toggle clamp that automatically takes up clearances in the dies due to con-

traction and expansion of the molds during production or shut-down periods. The Pressure-Pac injection unit effects denser castings. Ten models range from 100 to 1000 ton capacity, for casting all usual non-ferrous metals and alloys. *Lake Erie Engineering Corp.*

For more data insert No. 20 on postcard, p. 117

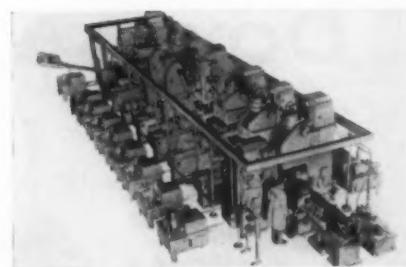


## Rotary shear cuts plates in one pass

New Schulze & Naumann rotary shears have one or two circular blades that traverse along a fixed straight lower blade and cut plates of any length in one pass at high speed. The plate rests rigidly during cutting, with resulting edges accurate for butt welding or caulk-

ing. Any desired beveled edge can be cut; also Y edges for fusion welding in a single pass. Various width strips can be cut; plates can be split into halves. Capacities are: thicknesses,  $\frac{1}{8}$  to  $\frac{3}{8}$  in.; lengths 8 to 49 ft. *Transmares Corp.*

For more data insert No. 21 on postcard, p. 117



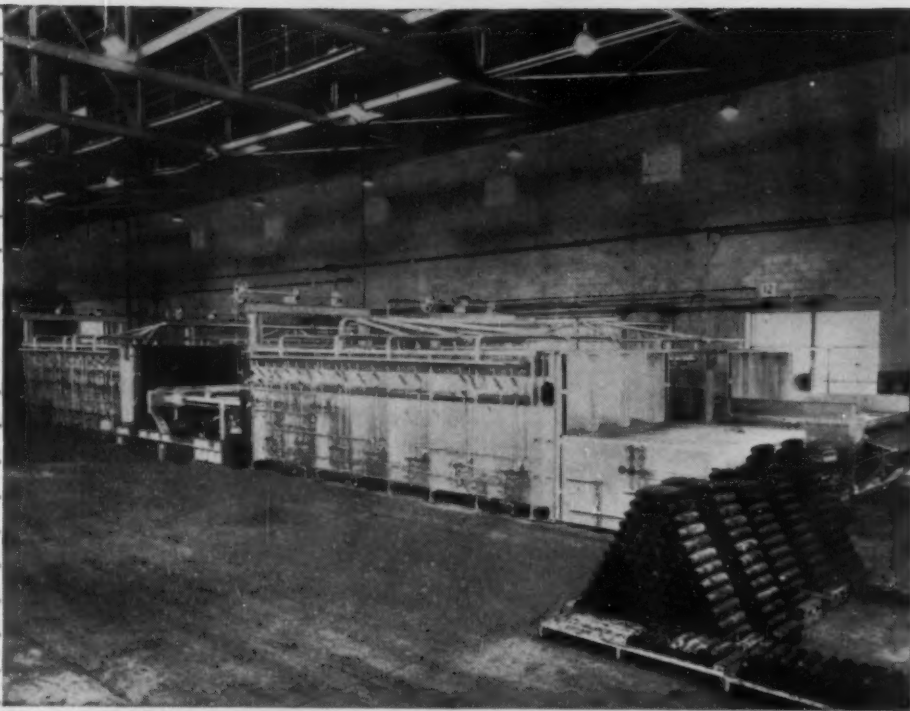
## Machine automatically turns, vibrates, inspects

Natco's new Holeway machine performs 101 automatic operations nearly every minute including inspection. It turns out 50 cylinder blocks per hr with one operator at controls. This waytype machine recently installed for a motor manu-

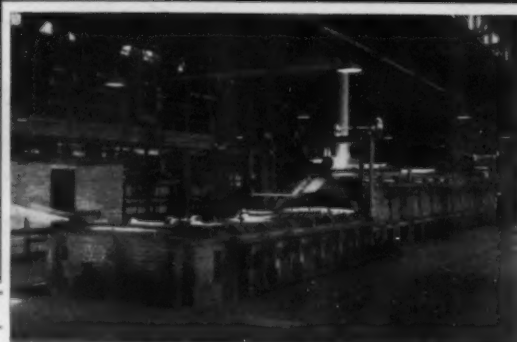
facturer mills, trepans, drills, counterbores, reams, chamfers, automatically turns the part 360° while vibrating to remove all chips, and finally automatically inspects. *National Automatic Tool Co.*

For more data insert No. 22 on postcard, p. 117  
**Turn Page**

Loftus heat treat line for treating shell cases provides completely automatic operation from loading conveyor to unloading conveyor.

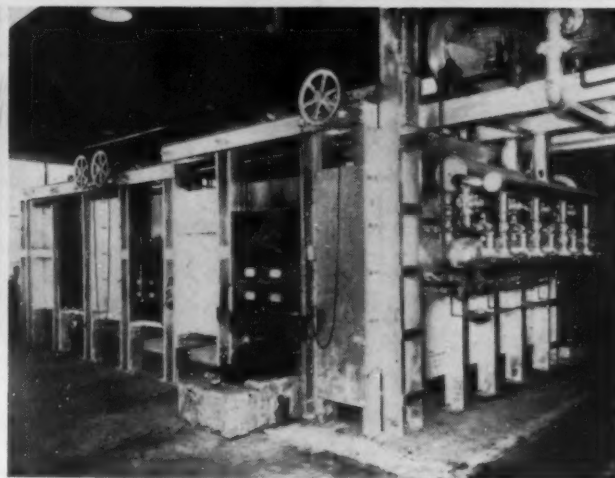


They Specify *Loftus* for Outstanding Performance!



Production rate increases of 50% have been achieved through installation of this Loftus strand furnace.

Loftus automatic continuous furnace for forging and heating produces loose, easily removed scale.



Loftus customers' experience has proven the superior performance, greater efficiency, and faster production rates achieved with Loftus heat treating furnaces. Loftus offers exclusive features such as "Pin-Point Quench" which assures absolutely accurate quench temperature. The Loftus "COVERALL" contract includes design, construction, installation, and operation.

*Loftus*

"Proven Heat-Treating Efficiency by Loftus." Shows many Furnace Types.

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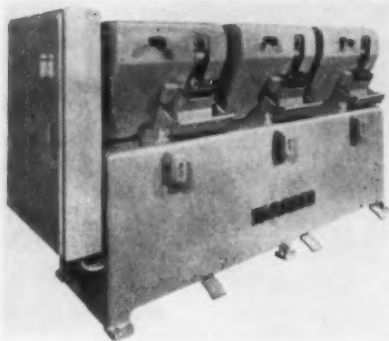
610 Smithfield Street, Pittsburgh 22, Pennsylvania



March 27, 1952

## New Equipment

Continued

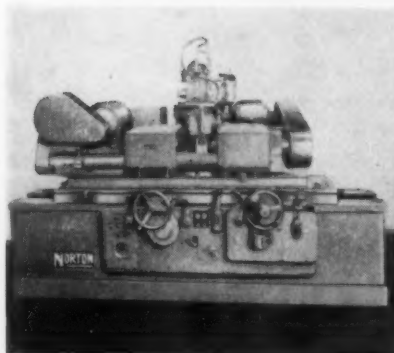


### New machines chamfer hypoid pinion teeth

A new line of burring and chamfering machines for hypoid pinion teeth embody several advanced features on which patents have been applied: Simultaneous chamfering on the acute side and removal of burrs and sharp edges on the profile, considerable part of root on both toe and heel of all teeth as well as peripheral chamfer on large end; output rate up to 300 com-

plete hypoid pinions per hr per station per machine; elimination of required skill; pushbutton simplicity of operation; no coolant required. The three-station Burr-Master illustrated chamfers simultaneously three different hypoid pinions of different dimensions—one in each station. *Modern Industrial Engineering Co.*

For more data insert No. 23 on postcard, p. 117



### Grinding airfoil surfaces of jet blades

External airfoil surface of jet engine turbine blades including buckets, blades, vanes, nozzles, etc. are ground on the Norton compound contour jet blade grinder. The machine incorporates type CTU grinding machine features in basic design for rapid precise grinding action. Blades are held in an arbor between synchronously-driven, left-hand and right-hand shape-produc-

ing units which impart a figure 8 motion to the arbor for grinding blade forms. The shaping motion presents the surface to be ground at the horizontal centerline of a wide grinding wheel which grinds the airfoil surface in one plunge grind. Width of surface that can be ground is governed by blade type. *Norton Co.*

For more data insert No. 24 on postcard, p. 117

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## Two new developments on Spiramatic Jigmils

Spindle head with automatic transmission and automatic trip mechanism for spindle bar feed are features on new Spiramatic Jigmils. The spindle head incorporates single helical gears operating in constant mesh. Spindle speeds are preselected by a rotating dial; actual speed change is made automatically by pushbutton. A new spindle bar feed unit with automatic trip mech-

anism stops the bar feed at any predetermined point. This provides accurate control. Series B Spiramatic Jigmils perform precision boring and milling operations ranging from tool and experimental work to production of repetitive work without jigs. Series C Jigmils are designed for large area flat work. *DeVlieg Machine Co.*

For more data insert No. 25 on postcard, p. 117



## Gage measures radial play in ball bearings

Fast, accurate measurements of the radial internal clearance in ball bearings is possible with a special Electrolimit comparator. A bearing is placed over a mounting spindle of a size corresponding to the ID of the inner ring. An outer ring floats axially and radially. A floating Electrolimit head assembly calipers the thickness of the bearing from the ID of the inner ring to the OD

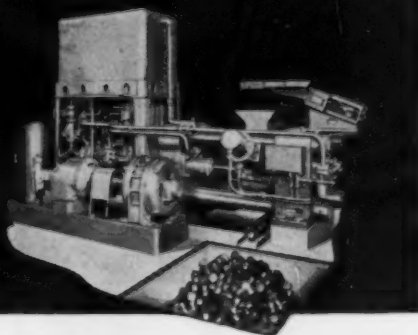
of the outer ring. Measuring load is applied upward and downward in successive operations, indicating maximum and minimum radial play. Successive movements of the outer ring are registered on an indicating meter; difference between the two readings is radial internal clearance. *Pratt & Whitney.*

For more data insert No. 26 on postcard, p. 117

Turn Page



# with a MILWAUKEE BRIQUETTING PRESS



Convert low-grade bulk borings, turnings, chips and shavings into compact high-grade briquettes with the press that pays for itself! The MILWAUKEE Briquetting Press effects substantial savings by conserving vital metals, providing close scrap control, and reducing scrap handling and storage costs.

Automatic in operation, the MILWAUKEE Press handles steel, aluminum, cast iron,

bronze, magnesium, brass and other metals at rates up to 3½ tons per hour. Briquettes produced can be charged directly into furnace or foundry cupolas. In most plants, savings pay for press in less than one year. Write today for 8-page illustrated Bulletin No. 117 for complete data on six models available.



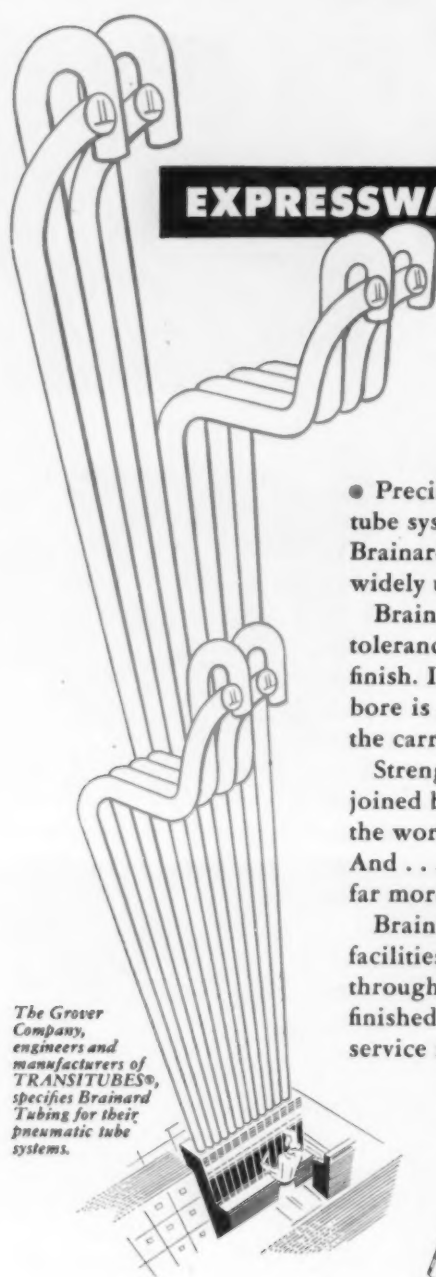
# Foundry Equipment Division

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March 27, 1952

125

## another job for **Brainard TUBING**



### EXPRESSWAY FOR HOT MAIL

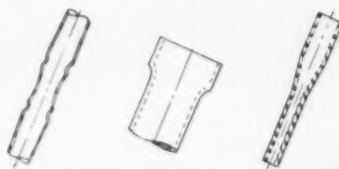
● Precision is important in pneumatic tube systems . . . a big reason why Brainard Electric-welded Tubing is so widely used for this application.

Brainard Tubing is produced to close tolerances, with a smooth inside finish. In straight or bent sections, the bore is a smooth expressway for the carrier cylinders.

Strength is uniform. Sections can be joined by a variety of methods, simplifying the work of both designer and fabricator. And . . . electric-welded tubing is far more economical than other types.

Brainard's integrated production facilities assure quality control throughout manufacture . . . from ore to finished tubing. Depend on Brainard service for *your* needs.

*The Grover Company, engineers and manufacturers of TRANSITUBES®, specifies Brainard Tubing for their pneumatic tube systems.*



### EASY TO FABRICATE

Brainard tubing is a uniform product made to close tolerances. Has good machining qualities and finish can be supplied as specified. Easily fabricated—can be beaded, expanded, swaged, spun, flanged, upset, grooved, fluted, flattened, tapered, and otherwise formed. Supplied straight or fabricated, sizes  $\frac{1}{8}$ " to 4" O.D.; .025 to .180 gage.

Fast delivery on certain sizes. For further information or catalog, write Brainard Steel Division, Dept. 0-3, Griswold Street, Warren, Ohio.



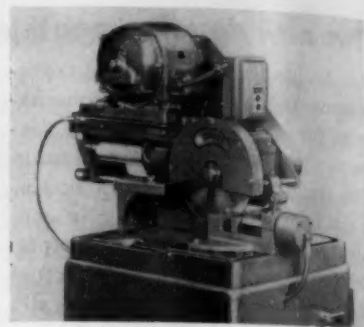
**WARREN, OHIO**

ATLANTA BALTIMORE BUFFALO CHICAGO CINCINNATI CLEVELAND  
COLUMBUS DAVENPORT DES MOINES DETROIT GRAND RAPIDS  
INDIANAPOLIS MILWAUKEE NASHUA NEW YORK PHILADELPHIA  
PITTSBURGH ROCHESTER SAN FRANCISCO SYRACUSE TOLEDO

**DISTRICT SALES OFFICES:**

## New Equipment

*Continued*



### Metal cut-off saw

Fully-automatic cut-off saw for non-ferrous metals uses a high-speed, carbide tipped, circular saw blade. Unit is completely automatic in operation and is controlled by single foot pedal. Maximum cut-off capacity for aluminum shapes is 3x5 in.; aluminum solids, 2x4 in. Both speed and accuracy are claimed for the machine. *Consolidated Machinery & Supply Co.*

For more data insert No. 27 on postcard, p. 117

### V packing

Continuous chevron-type packing design for 500-6000 psi is available in styles for high or low temperatures. The user of Continuous-Vee packing cuts his own rings on the job to fit specific rod and stuffing box dimensions. Packing is furnished in sizes  $\frac{1}{4}$  to 1 in., by  $\frac{1}{16}$  in. increments, 25 ft per spiral. *Flexrock Co.*

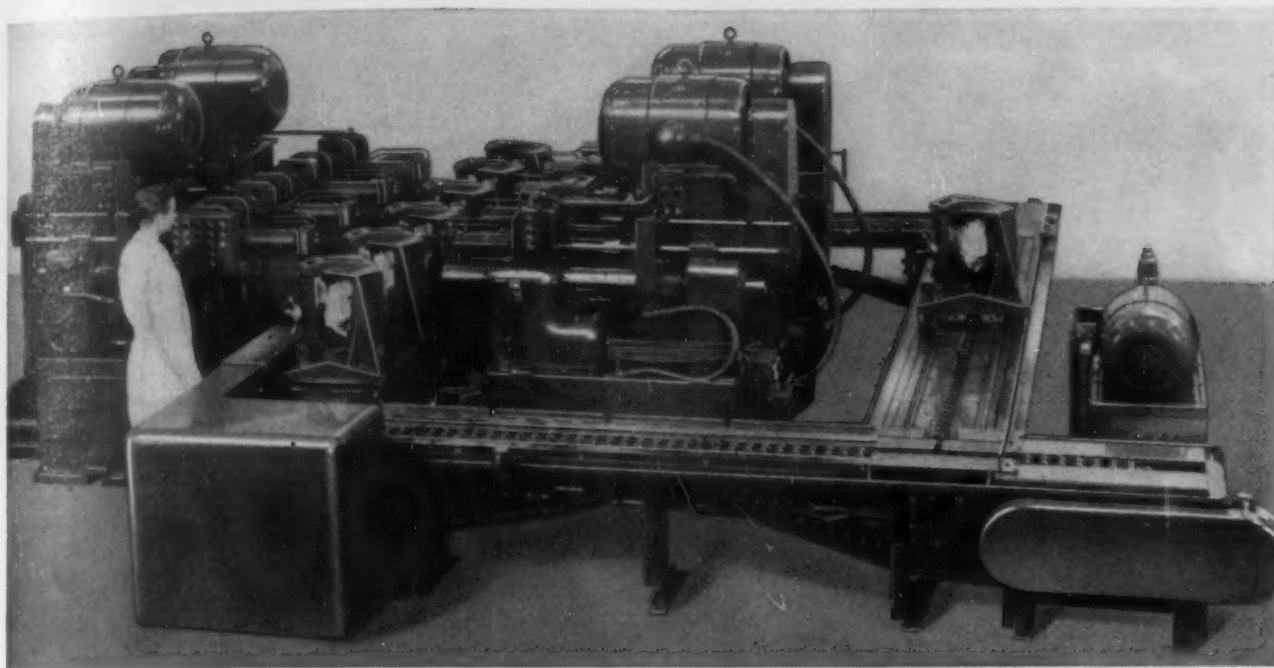
For more data insert No. 28 on postcard, p. 117

### Packaged extinguishers

Automatic built-in carbon dioxide systems are available for installation by the customer for protection against normal industrial types of flammable liquid hazards of 6000 cu ft. Each package contains temperature-rate-of-rise fire detectors and connecting tubing, automatic control heads, Multijet nozzles, and a cylinder-supporting frame. Cylinders are shipped as a separate item. Accessory equipment is not included in the basic package. Systems may be ordered with or without pipe and fittings. *Walter Kidde & Co., Inc.*

For more data insert No. 29 on postcard, p. 117

**Turn Page**



Cross Transfer-matic, with 10 Howell motors, helps speed aircraft production.

## Drills, bores 80 cylinder heads per hour!

This Cross Transfer-matic drills and bores 80 aircraft engine cylinder heads per hour! That means a lot of engines for military or civilian planes.

Built for one of the industry's leading manufacturers, this machine automatically rough drills and forms valve pockets and spring compartments, and finish bores valve guideholes and valve insert and spring seats. The whole operation takes only 45 seconds!

Ten precision-built Howell motors, ranging in size from one to 30 H.P., were specified

to drive the spindles, the hydraulic and coolant pumps, and the chip and fixture conveyors. Each Howell motor was chosen to fit its job exactly.

Howell engineers will be glad to work with you, too, to get top performance from your electric motor installations. They will design special motors if required, or recommend Howell motors in standard NEMA frame sizes from 1/6 to 200 H.P. So, for every job, especially your toughest ones, get in touch with the Howell representative in your city, or write directly to us today.

**HOWELL ELECTRIC MOTORS COMPANY**

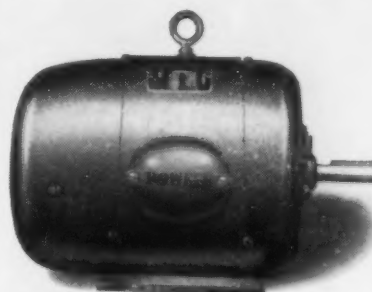
**Howell, Michigan**



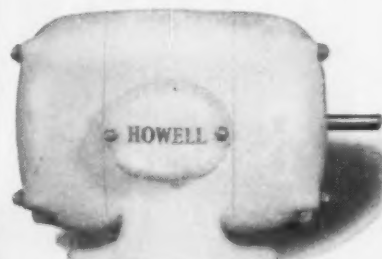
**HOWELL MOTORS**

**HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.**

*Precision-built industrial motors since 1915*

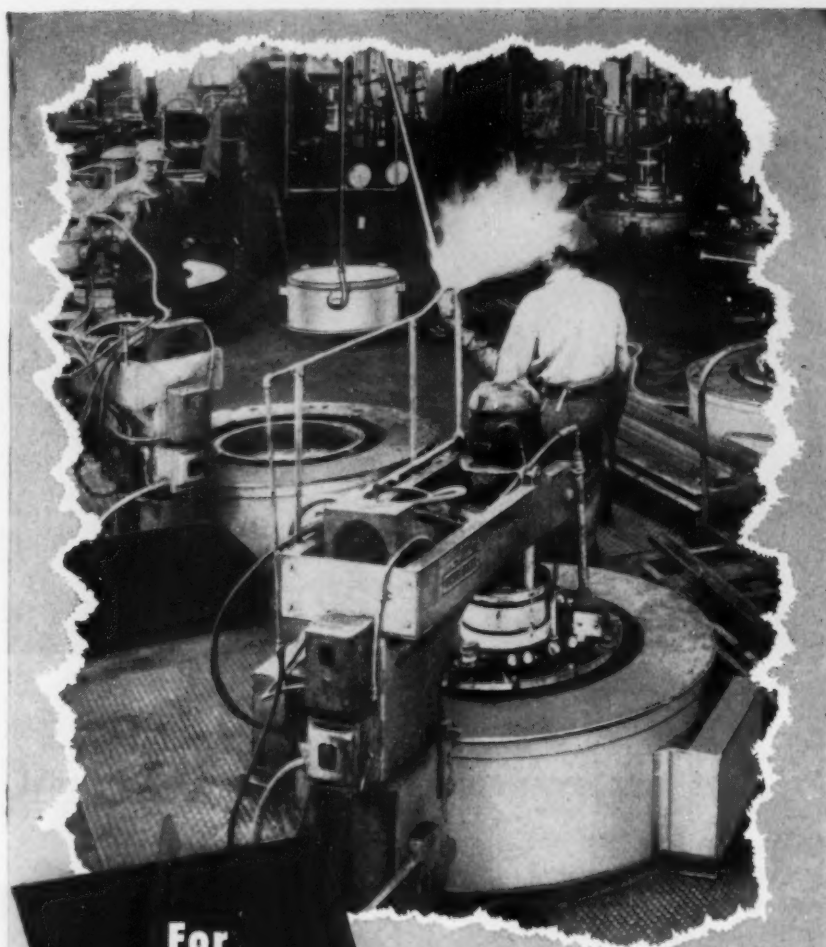


**HOWELL Type K Motor.** Offers constant performance in the presence of dirt, dust, fumes and moisture. Sizes from 3 to 150 H.P. at 1800 R.P.M. Either vertical or horizontal mounting.



**HOWELL Sanitary Motors** meet the most exacting standards of the dairy and food industries. They contain no pockets, cracks, or crevices. Available for vertical or horizontal mounting.





**For  
Accurate  
Case Depth  
and Carbon  
Control  
we rely on  
HEVI DUTY  
Carburizing  
FURNACES**

**says  
Burgess Norton  
MANUFACTURING CO.**

● Burgess Norton uses 12 Hevi Duty vertical retort furnaces for carburizing piston pins to rigid case depth and carbon specifications. Metallurgical tests and quality control prove that each pin receives uniform heat treatment. These rugged furnaces operate 24 hours a day, six days a week with minimum down time.

Learn how dependable Hevi Duty vertical retort furnaces provide accurate heat treatment on a production basis. Write for your copy of bulletin HD-646 — today.

**HEVI DUTY ELECTRIC COMPANY**

HEAT TREATING FURNACES **HEVI-DUTY** ELECTRIC EXCLUSIVELY

DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS

MILWAUKEE 1, WISCONSIN

## **New Equipment**

*Continued*

### **New work spindle**

Standard equipment on Hamilton No. 1 gear hobbors is a draw bar collet operated by a hand wheel. Faster, and easier to operate, this collet adds to the machine's production by reducing time required for loading and unloading. Additional feature of the new spindle is the adjustable spindle nose which assures trueness of the workpiece to within 0.0001 in. Independent selection of speed, feed, and indexing is not changed by the improvement. *Hamilton Tool Co.*

For more data insert No. 30 on postcard, p. 117

### **Metallic O-rings**

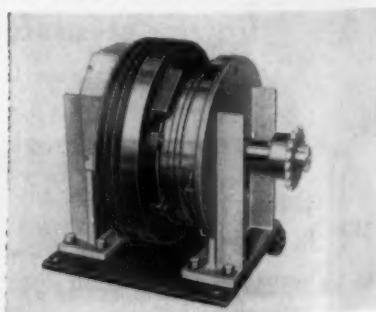
For static seals, metallic O-rings are permanent, easily installed, hollow metal tubing rings filled with inert gas at 600 psi. They offer positive metal to metal static seals wherever problems of heat, pressure corrosive liquids or gases are involved. They are dimensionally stable under heat or cold, are not affected by age, and are impervious to oils, gases or aromatic mixtures. *United Aircraft Products, Inc.*

For more data insert No. 31 on postcard, p. 117

### **Drive unit**

Combination clutch and brake drive has been developed for industrial applications such as conveyers, indexing tables, punches, stitchers, shears, etc. Wherever a stop-start operation is required, the CCB-50 drive can be incorporated in the design. Almost any control is said to be possible, and semi-automatic and full automatic stop-start can be easily set up. At present the drive is limited to a maximum 5 hp; the output shaft speed is 600 rpm. *Merritt Solem Corp.*

For more data insert No. 32 on postcard, p. 117



**Turn Page**

another tough job done better with Verson equipment

**THIS**  
**Verson**  
**TOOL-UP**  
breaks round corner  
square billets  
for 90, 105 and 120 mm.  
projectiles

In this Verson engineered tool-up a 500 ton Verson press and a Verson billet breaking die breaks 3, 3½ and 4 inch round corner square billets preparatory to the forging of 90, 105 and 120 mm. projectiles. The tool-up is automatic—the proper length of stock is fed into the press pneumatically; each press stroke breaks a billet and the broken piece drops into a conveyor to be moved to the next stage in a fully automatic Verson shell line.

Herc is another example of how know-how combined with imagination can boost production and cut costs on vital defense work. You can put this experience to work on your stamping and forging problems, too. Write or phone.

*Close-ups of the Verson billet breaking die. The upper view is from the rear of the press, the lower view from the front.*

Originators and Pioneers of Allsteel Stamping Press Construction

## VERSON ALLSTEEL PRESS COMPANY

9314 South Kenwood Avenue, Chicago 19, Illinois

So. Lamar at Ledbetter Dr., Dallas, Texas

**A Verson PRESS FOR EVERY JOB FROM 60 TONS UP**

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING  
DIE CUSHIONS • COMPRESSION AND TRANSFER MOLDING PRESSES

March 27, 1952

129



KELVINATOR has standardized on

**PLATECOIL**

REPLACES PIPE COIL

The Flexseal Melting Tank pictured above is one of many heating processes utilizing Platecoils at the Kelvinator Division, Nash-Kelvinator Corp., Detroit, Michigan. They have found that Platecoils have so many advantages for heat transfer operations that they have standardized on their use in such applications as alodizing tanks, defluxing dip tanks, defluxing washers, parts washers and dip alodizing systems.

- ★ **MORE EFFECTIVE HEATING.** Platecoil's faster heating has resulted in quicker starts for those applications shut down during the night.
- ★ **MORE WORKING CAPACITY.** Platecoils take up less room in the tank than the pipe coils formerly used.
- ★ **STEAM LEAKS REDUCED.** Platecoils have no joints in the solution. Irritating steam leaks have been greatly reduced.
- ★ **SAVES DOWNTIME AND DUMPING OF SOLUTION.** Platecoils are easily removed for maintenance without dumping tank solution as was previously required. All connections are outside the solution. Platecoils are disconnected, lifted out and replaced in a hurry.
- ★ **EASY CLEANING SAVES DESCALING TIME.** There is no comparison in the time it takes to descale the Platecoils used in Phosphatizing solutions and the pipe coils formerly used. The Stainless Steel Platecoils pick up less scale in the first place — and this is quickly removed by brushing. Compare this to the hours of pickling and chipping formerly required.

You, too, can save money by using Platecoils in most any application where pipe coils are now used. Why pay more, when Platecoils will give you more efficient heating at less cost? Send today for your copy of bulletin No. P73.

**PLATECOIL gives you these ADVANTAGES**

- Cleaned and Repaired Without Dumping Tank Solution
- Greater BTU Transfer Per Unit Area
- Weighs Only Half as Much as Pipe Coil
- No Threaded Joints in Tank
- Increased Tank Capacity
- Fast, Easy Installation
- Easy to Clean

**PLATECOIL**

DIVISION

**KOLD-HOLD MFG. CO.**  
LANSING 4, MICHIGAN

**New Equipment**

Continued

**Drill press**

A two-way drive aligner belt tensioner features new drill presses. Without wrenches or tools, belt tension is instantly released for quick, easy speed changing. Splined-drive parts, including the pulley drive sleeve are made of steel to effect quiet running and longer life. New type guard covers the pulley spindle which is guaranteed true-running. Selection of speeds is available in two ranges. *Boice-Crane Co.*

For more data insert No. 33 on postcard, p. 117

**Chip remover**

Prolonging tool life on steel milling operations is claimed for a new chip remover. The device consists of a rotating wire brush on a magnetic base, which can be mounted or dismounted on any horizontal or vertical milling machine. The brush is placed in contact with the revolving teeth or blades of the milling cutter and serves to push off adhering chips. *Detroit Milling Cutter Co.*

For more data insert No. 34 on postcard, p. 117

**Soldering iron**

A new standard-voltage, lightweight, soldering iron is designed for pinpoint, high-speed soldering in close quarters. The iron features a long-lasting, iron-clad, corrosion-resistant working surface, said to reduce maintenance costs and production-line stoppages due to frequent changing of tips. It will have application by radio, electronic and instrument manufacturers. *General Electric Co.*

For more data insert No. 35 on postcard, p. 117

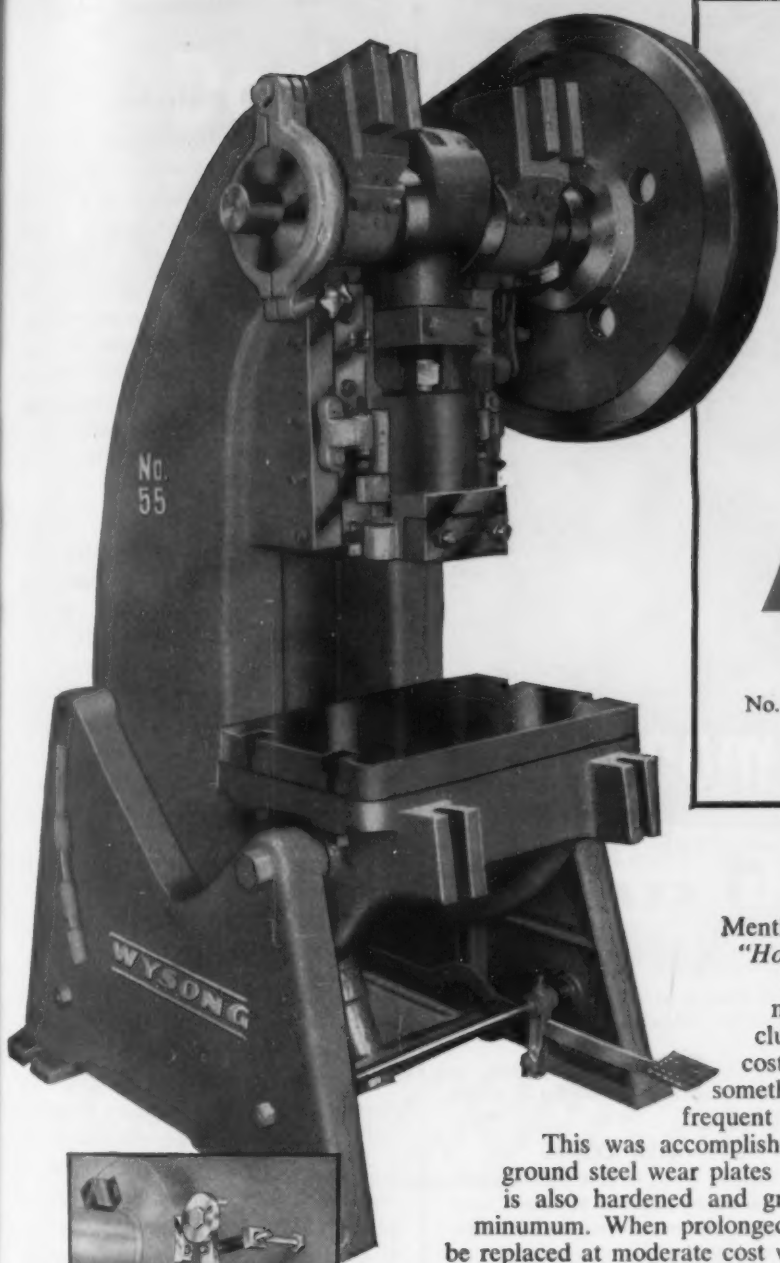
**Instrument cleaning**

Called Instro-Met, an industrial cleaning machine cleans electrical and mechanical instruments with small or large delicate parts. Three clear-view windows on motor support permit instant checking while machine is in operation. Tanks and covers are spun aluminum. All are 10 in. high and have 10-in. diam, 4-gal capacity. Heavy cast aluminum basket has removable compartments for cleaning variety of different parts simultaneously. *Zenith Mfg. & Chemical Corp.*

For more data insert No. 36 on postcard, p. 117

Turn Page





*It's  
a*

**WYSONG!**

No. 55 — available in flywheel and geared types

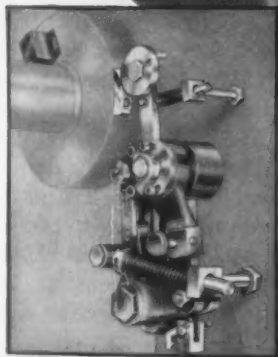
Mention Punch Presses and the first question is, "How about the Clutch?"

That is why Wysong insisted on more than mechanical efficiency in the square pin type clutch. They insisted on something to reduce costly repairs and expensive down time . . . something to eliminate excessive wear and too frequent scoring of crank shafts and clutch dogs.

This was accomplished with easily replaceable, hardened and ground steel wear plates (*Patent applied for*). The steel clutch dog is also hardened and ground for perfect fit, reducing wear to a minimum. When prolonged use does produce wear, wear plates can be replaced at moderate cost with negligible loss of time.

An improved safety feature is also provided by spring loading the clutch finger to insure complete disengagement (*Patent applied for*). When set for single stroke operation a second stroke cannot be made until the foot pedal is completely released and again depressed.

Compare these and other features of Wysong Presses with any others you have considered best in punch press design and construction. *Feature for feature and dollar for dollar you get more when you 'Buy Wysong'.*



#### CLUTCH DETAIL

Note roller and cam which force disengagement through clutch pawl. Clutch finger returns to starting position through spring and toggle leverage.

Wysong builds Squaring Shears, OBI Presses, Slip Roll Formers, and Rotary Combination Machines. See your dealer or write to the factory for full information. Wysong and Miles Company, Greensboro, N. C.

**WYSONG**



## You can save money... WITH **ALSIMAG**<sup>®</sup> CERAMICS

### HEAT RESISTANT WORK HOLDING DEVICES

Precision made for your requirements. For holding work during brazing, soldering, electronic heating. Superior resistance to repeated hot-cold shock. Proper jigs, templates or other work holding devices can speed your operations many times over. Outline your problems and let us make recommendations.

### PRECISION CORES

Can be furnished to exact dimensions for precision castings. Also economical and accurate method of forming many small area holes in castings.

### STRAINER OR CUT-OFF CORES

Used in the riser to form a weak joint between riser and casting. Reduces cut-off time. In many cases riser can be knocked off instead of cut off. A great time and money saver. Can be made to your specifications. Cameron Cores, Patent No. 2313517, sold to Meehanite Licenses only.

Dies in stock on many sizes and designs. Special designs reproduced economically. Samples from our files without charge. Special samples hand made at reasonable cost.

### GATE TUBES

Used in casting to convey molten metal into casting without contamination.

### TROUGHS

For conveying molten metals. Custom made.

### STRAINER CORES

These ceramic cores fit into gate of mold, strain the metal, regulate its flow. Cleaner castings, fewer rejects. Money saver. Made in two materials:

**ALSIMAG 564 (WHITE)** is less expensive, gives perfect performance with lower melting point metals such as cast iron. Adequate for some cast steel applications but test this material on steel applications before adopting it as standard. Has heat resistance above that of many materials recommended for use with cast steel but we are on the conservative side.

**ALSIMAG 202 (TAN)** has highest heat resistance. For use with higher melting point metals such as steel.

## AMERICAN LAVA CORPORATION

CHATTANOOGA 5, TENNESSEE

50TH YEAR OF CERAMIC LEADERSHIP

OFFICES: Philadelphia • St. Louis • Cambridge, Massachusetts • Chicago  
Los Angeles • Newark, N. J. • Dallas, Texas

## New Equipment

Continued

### Specimen polisher

Conical disk and belt drive from a ¼ hp motor are features of a new metallographic polisher that provides polishing head speeds from 112 to 1160 rpm, at full torque, regardless of specimen pressure on the head. Polisher has a removable 9-in. head. Speed of rotation is variable and is maintained automatically. A special table accommodates two polishers. *Fisher Scientific Co.* For more data insert No. 37 on postcard, p. 117

### Meter matcher

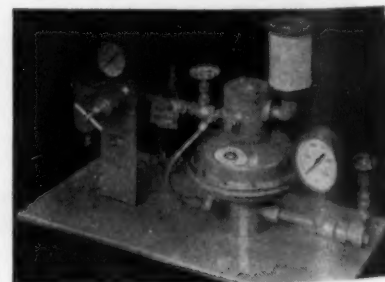
The meter matcher is a power frequency amplifier that reduces the errors caused by measuring instruments that load a test circuit. Use of the meter matcher relieves a test circuit from supplying the usual power to the measuring voltmeter or wattmeter; errors caused by meter currents are thus virtually eliminated. *Keithley Instruments.*

For more data insert No. 38 on postcard, p. 117

### Power package

For oil or water service, a new hydraulic power package is applicable where low volume output at high pressure is the requirement such as in hydrostatic testing. To install, the power package requires only two connections—one to plant air supply line and the other to manifold, from outlet fluid port of power unit for immediate operation. Contains all necessary equipment, including air operated pump, air muffler, air filter, air lubricator, air regulator, valves and gages all mounted on an easy-to-carry masonite base. Measures 12x12x24 in.; weighs 45 lb; capacity, 30,000 psi. *Sprague Engineering & Sales Corp.*

For more data insert No. 39 on postcard, p. 117



Turn Page

Don't you let  
this happen...

WEATHER The Daily Home Journal FINAL

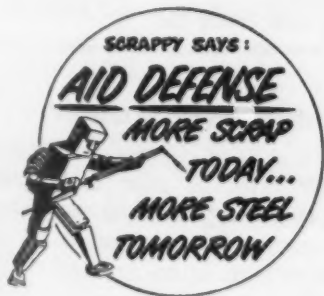
# SCRAP METAL FAMINE CUTS STEEL PRODUCTION

Critical Shortage Threatens Shutdown  
to Many Industrial Plants

*Start a SCRAP round-up Today!*

Are your business and the national defense program threatened by an impending steel shortage? The answer is an emphatic yes. Steel mills everywhere report scrap inventories at a dangerous low. Indeed, some furnaces have already been shut down for lack of iron and steel scrap. Others are sure to follow unless stockpiles are rapidly built up.

**WHAT CAN YOU DO ABOUT IT?** Start a scrap round-up! Go over your plant with a fine-tooth comb, reclaiming every pound of iron and steel that is not being used. Then get in touch with your local scrap dealer. Remember, every little bit will help America meet this crisis. Every little bit will help insure your working future.



**WEIRTON STEEL COMPANY**

WEIRTON, WEST VIRGINIA

**NATIONAL STEEL CORPORATION**





# THOMAS *Flexible* ALL METAL COUPLINGS

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes:  $\frac{1}{2}$  to 40,000 HP — 1 to 30,000 RPM.

*Specialists on Couplings for more than 30 years*



PATENTED FLEXIBLE DISC RINGS

**BACKLASH  
FRICTION  
WEAR and  
CROSS-PULL**  
are eliminated  
LUBRICATION IS  
NOT REQUIRED!

THE THOMAS PRINCIPLE GUARANTEES  
PERFECT BALANCE UNDER ALL  
CONDITIONS OF MISALIGNMENT.

• • •  
NO MAINTENANCE PROBLEMS.

• • •  
ALL PARTS ARE  
SOLIDLY BOLTED TOGETHER.

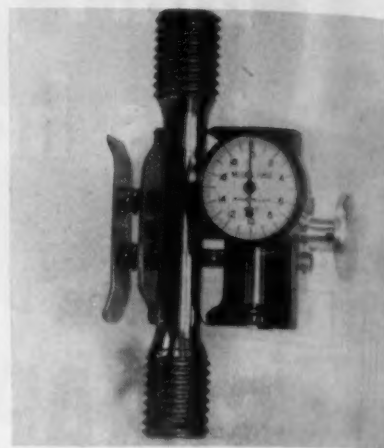


Write for the latest reprint of our Engineering Catalog.

**THOMAS FLEXIBLE COUPLING CO.**  
WARREN, PENNSYLVANIA

## New Equipment

Continued



### Extensometer

Simplified Extensometer indicates elongation of metallic and plastic specimens in tension testing directly, without a multiplying lever. It weighs 7 oz, attaches to the specimen by spring clamps which are opened or closed while it is held in the palm of the hand. It adjusts to take wire, sheet, plate or round specimens to  $\frac{1}{2}$  in. thick or wide. Standard gage length is 2 in. Elongation is registered to 0.045 in. in dial gradients of 0.0002 in. *National Forge & Ordnance Co.*

For more data insert No. 49 on postcard, p. 117

### Refractory materials

Extreme heat-resisting refractory materials, trade-named Hy-Temp Refracto, consist of bricks in all shapes, bonding cements and lining and bottom materials for electric furnaces. Products have varied formulas for special purposes: Hy-Temp Refracto Plasti-Bond, Induction Furnace Ram Mix, Electric Furnace Bottom Mix. *National Foundry Sand Co.*

For more data insert No. 41 on postcard, p. 117

### Heavy duty stapler

Thick pads of paper can be stapled easily with a new desk model stapler, using the principle of long leverage with cam action. It is light weight, drives flat steel staples 11/64 to 9/16 in. long. Booklets, folders, blueprints, etc. can be stitched. *Heller Co.*

For more data insert No. 42 on postcard, p. 117

Turn Page

just about  
pound heat  
test ingot wh  
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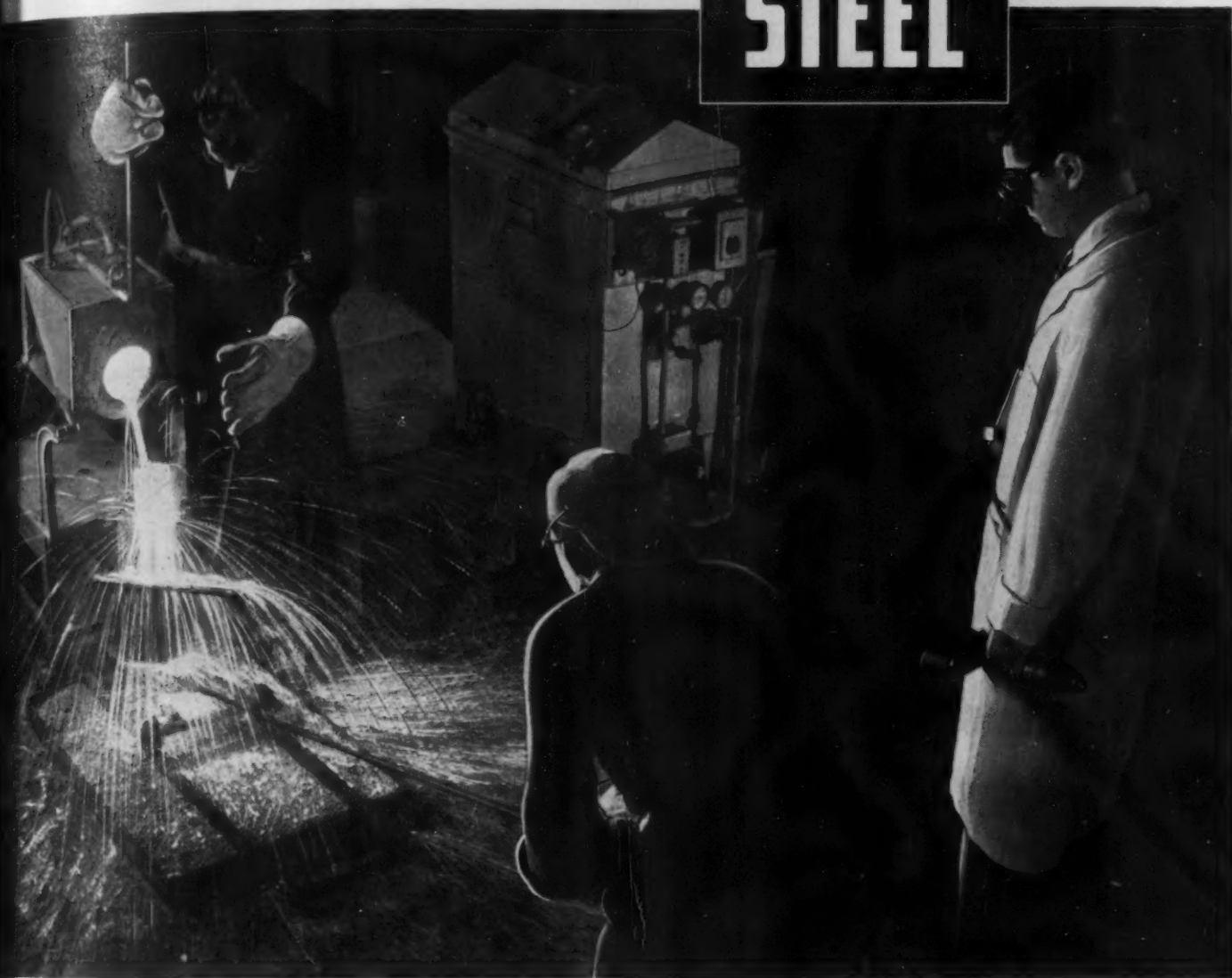
ARMY SAYS  
NO DEFENSE  
MORE SCRAP  
TODAY.  
MORE STEEL  
TOMORROW

Just about an hour, this midget furnace can make a 25-pound heat of steel to any desired analysis—then pour a test ingot which J&L metallurgists, in their unending search for better quality steel, put through rugged chemical and physical experiments.

Behind The

# J&L STEEL

Trade Mark



## A Research Program with a Single Objective . . . Better Steel

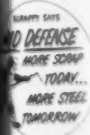
Many new developments in the art of steelmaking at J&L originate in the research laboratories. Here scientists study every phase of operation—from raw materials to finished steel products.

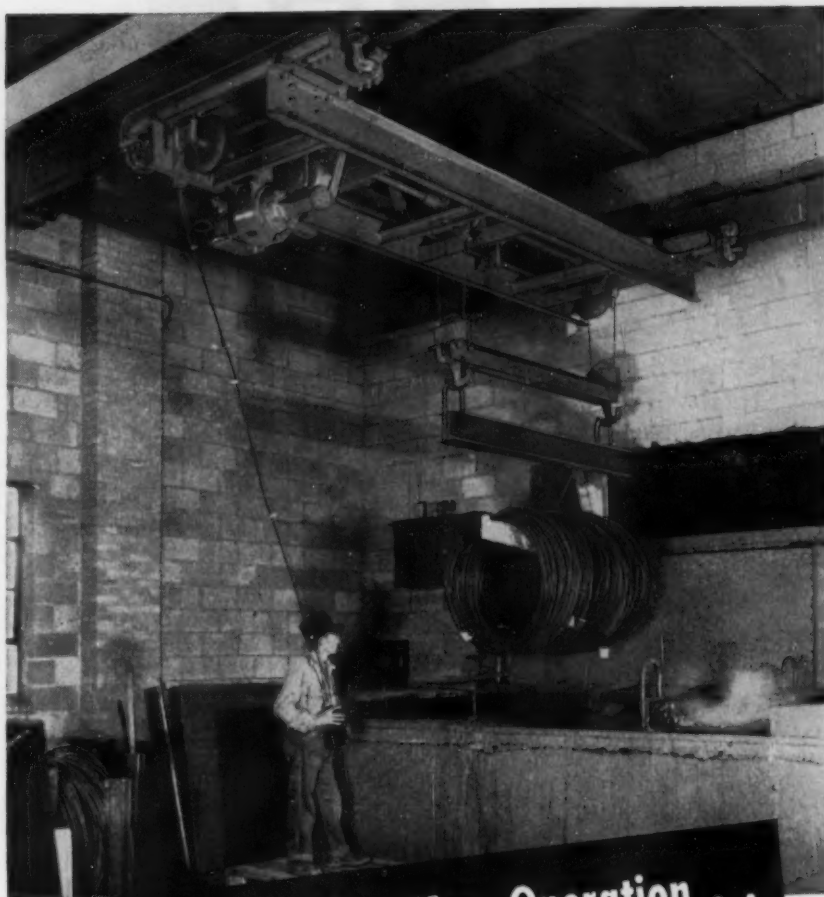
Before good steel can be made it is necessary to have good raw materials. In the mining of iron ore in Minnesota, Michigan and northern New York, J&L research has pointed the way to an increased supply and to a consistent improvement in quality. In the preparation and utilization of coal, J&L

research has led to significant improvements in the quality of metallurgical coke, which favorably affects iron and steel quality. Thus, from the ground up—research is charting the course of progress at J&L, pointing out new and better ways to make steel, and to make it more useful to industry.

Behind the J&L trade mark, and behind every J&L steel product is research—creative, imaginative and continuous research—research with the single objective of making better steel.

**JONES & LAUGHLIN STEEL CORPORATION**  
PITTSBURGH 30, PA.





**Continuous One Man Operation . .**

## with **AMERICAN MONORAIL**

Here's an operation that must be on the go, all the time and fast, and yet, one man plus an American MonoRail Crane keeps the line flowing smoothly and fast. Fast operating, constant service, American MonoRail Cranes are ruggedly built to handle loads up to 10 tons at operating speeds of 500 feet per minute. Articulated trolleys assure perfect alignment of trucks for smooth crane travel.

Let an American MonoRail engineer explain all the advantages of these constant service cranes.

**THE AMERICAN MONORAIL COMPANY**

13103 ATHENS AVENUE

CLEVELAND 7, OHIO

### **New Equipment**

*Continued*

#### **Two-wheeled trailer**

Trail-Skid, a two-wheeled trailer, handles long lengths of materials in confined spaces. Pulled by fork or platform lift truck, the unit is adaptable for transporting multiple palletized loads and for general plant hauling. Trail-Skid can be used with or without stakes. Five models range from 7 to 16 ft long. All have 10,000-lb capacity. *Phillips Mine & Mill Supply Co.*

For more data insert No. 43 on postcard, p. 117

#### **Induction coil liner**

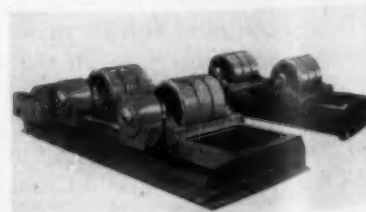
An expendable induction coil liner, quickly replaceable, has been developed for use in through heating alloy steel bar stock where heating temperatures range from 2000 to 2200°F. The liner centralizes the bar in the coil assuring even heat and accurate coupling. It will operate in coils placed vertically for press up-setting, or in horizontal position, permitting faster handling to horizontal up-setters. Vertical coil applications give slightly longer life to the liner. *Heatronic Engineering.*

For more data insert No. 44 on postcard, p. 117

#### **Turning rolls**

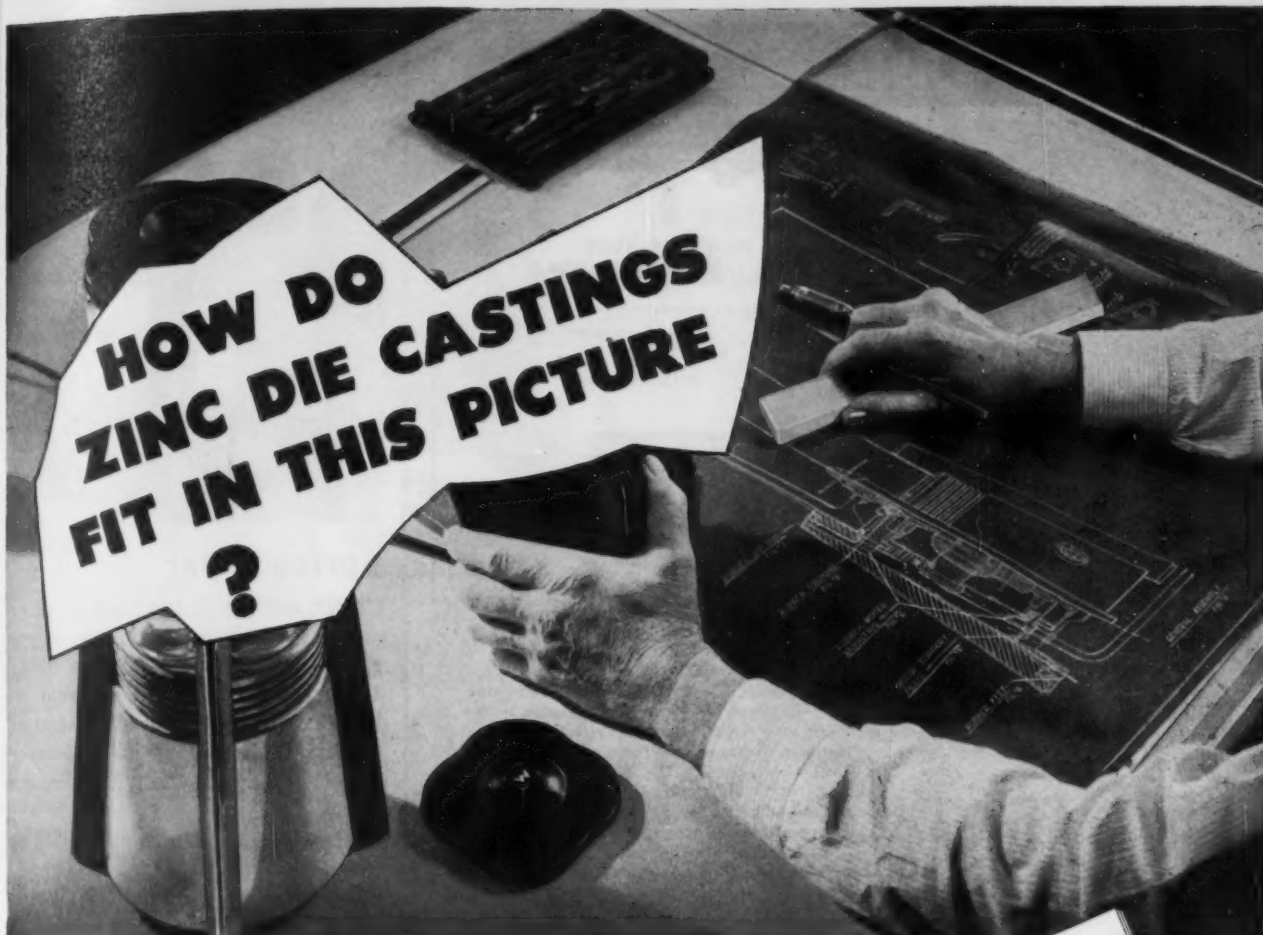
Heavy duty turning roll has 75-ton capacity with one power unit and two idler units; handles vessels up to 14 ft diam. Design features compact, three-in-one motor-variable speed transmission-gear reducer set with a range from 5 to 40 ipm, totally enclosed, direct drive worm gear reducers, and anti-friction bearings. The 5 hp motor is protected with a reversing magnetic starter, and anti-jog reversing relays. Rubber tired wheels are 22 in. diam., have 21-in. face. *Reed Engineering Co.*

For more data insert No. 45 on postcard, p. 117



*Turn Page*



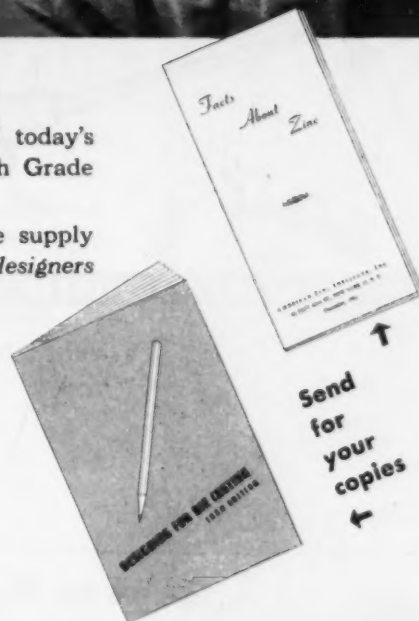


Selection of materials is probably the major problem of most of today's product designers. As one of the leading suppliers of Special High Grade zinc to the die casting industry, we wish to make this statement:

A careful examination of all of the factors which influence the supply of Special High Grade zinc lead to the conclusion that *product designers should continue to take advantage of ZINC Die Castings.*

Admittedly a major change in the present world military picture would alter the outlook with respect to the supply of *all* metals. However, now that the military needs for zinc have been reasonably well established, there is every reason to believe that ample supplies are available to the die casting industry, in spite of the "guns and butter" economy. Furthermore, there is considerable evidence—based on a world-wide analysis—that zinc will be in good supply for a long time to come. We will be glad to explain to you the various factors which lead us to these conclusions.

Ask your die casting supplier about his ability to help you to meet your current design and production problems with ZINC Die Castings. Ask us for a copy of "Facts About Zinc" and for our booklet "Designing for Die Casting."



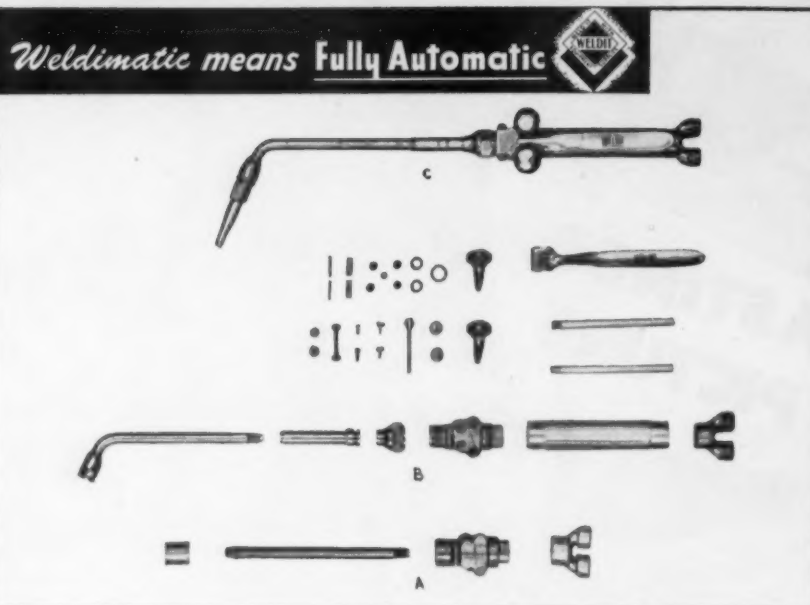
Send  
for  
your  
copies



**ZINC**  
FOR DIE CASTING ALLOYS

The New Jersey Zinc Company, 160 Front St., New York 38, N. Y.

The Research was done, the Alloys were developed, and most Die Castings are based on  
**HORSE HEAD SPECIAL ( 99.99 + % Uniform Quality ) ZINC**



## Big Names!

Big names tell a story. World famous names such as Revere Brass, Chase Copper, and Federated Metals Aluminum are your guarantee that the materials in a Weldit torch are the best.

Illustrated above are the three stages of Weldit torch construction. (a) The rough castings and tubings, (b) Castings and tubings, machined with other finished parts, placed in assembly position, (c) the completed *Weldimatic* torch ready for use.

Note the many precision parts that go into the nerve center of a Weldit *Weldimatic* torch to give smooth, trouble-free operation and long life.

*Weldimatic* natural action!  
To light—squeeze, to shut off—release grip.



Illustrated, WELDIT Model W-45  
*Weldimatic* Welding Torch  
with lock lever control.

**Weldit**  
INC.  
SINCE 1918



A limited number of Weldit  
Dealer franchises available.

998 OAKMAN BOULEVARD, DETROIT 6, MICHIGAN

CANADIAN DISTRIBUTORS—ALLOY METAL SALES—881 Bay St., Toronto 5, Ontario, Canada

LOCK  
JOINT

Specialty

*Now* You can fill your needs  
with **HELICAL TUBING**

**Welded and Cold Drawn  
Stainless Steel Tubing**

Special Purpose Tubing In All Available Materials

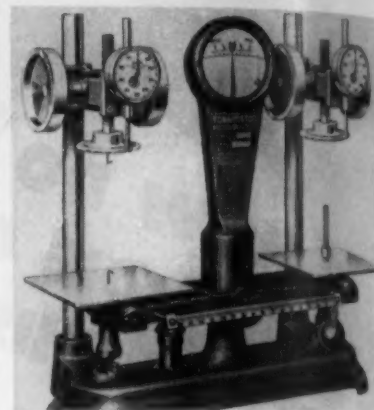
As Welded

For full detailed information about Helical Tubing send today for your HETCO Catalog.

**HELICAL TUBE CORPORATION**  
19 Washington St., East Orange, N. J.  
Manufacturing Plant—Grand Rapids, Michigan

## New Equipment

Continued



### Spring tester

Closer control in the production of coiled springs is provided by a new spring testing machine. The tester features a high degree of sensitivity, provides a standard method of testing both for the manufacturer and the ultimate user. The smaller model measures a load up to the nearest 0.01 oz and to a capacity of 3 lb; the larger is for loads to the nearest 0.2 oz to 16 lb. *Torrington Mfg. Co.*

For more data insert No. 46 on postcard, p. 117

### High strength glue

Compounded for binding the abrasive to the surface of metal-polishing wheels, Belgrade glue has improved water absorption qualities that result in more glue from each pound of dry glue. The glue is said to have proper viscosity, flexibility and strength characteristics required to prevent abrasive from tearing loose while the wheel is in operation. *Hanson-Van Winkle-Munning Co.*

For more data insert No. 47 on postcard, p. 117

### Reflex sight gage

Liquid level can be observed from angles up to 15° off vertical or horizontal on a new reflex sight gage designed to observe liquid level or the internal activity of tanks, vats or vessels. Standard model has cast iron housing, fluted pyrex type sight glass and asbestos gaskets. Visible length is 4½ in. It is designed for temperatures to 500°F and vacuum or pressures to 15 lb. *Rucker Co.*

For more data insert No. 48 on postcard, p. 117

• A typical Nicholson file tooth shape in greatly exaggerated size. Mottled area is a photomicrographed cross section of file after hardening. The uniformly distributed white iron carbides are of extreme hardness.

**1**

**FINE-PARTICLE  
IRON CARBIDES**

**2**

**EXCEPTIONAL  
HARDNESS**

**3**

**LONG-LASTING  
SHARPNESS**

# A good tip to remember

In a file, it's the tip of the tooth that counts. That's the part which does the work. On it depend the file's cutting efficiency and serviceable life. Nicholson metallurgy, tooth designing, cutting machinery, hardening processes—all combine to put onto Nicholson and Black Diamond file teeth the strongest, sharpest, longest-lasting tips science and human skill can achieve.

That's why the tips of the teeth give you the tops in file performance (plus the tops in value) when you buy Nicholson or Black Diamond brands. Your industrial distributor will back up that statement.

READ MORE ABOUT FILE QUALITY, kinds, use and care in Nicholson's famous 48-page illustrated book, "FILE PHILOSOPHY." It's **FREE**. Send for your copy.



**NICHOLSON FILE COMPANY • 31 ACORN STREET, PROVIDENCE 1, RHODE ISLAND**  
(In Canada, Port Hope, Ont.)



## NICHOLSON ... A FILE FOR EVERY PURPOSE





# What's New in New Jersey

... Just recently opened to traffic is the New Jersey Turnpike—probably the world's finest piece of highway engineering. The Turnpike was built by private capital in the remarkably short time of 24 months at a cost of \$225,000,000.

... Crossing the state from George Washington Bridge to the Delaware Memorial Bridge at Deepwater, it permits direct non-stop 60-mile-an-hour traffic. Ultimately it will connect with the Pennsylvania Turnpike and the to-be-built Maryland Express Highway to give fast trucking between New Jersey and Pittsburgh, Baltimore and Washington.

... This Turnpike is an important addition to New Jersey's magnificent highway system which consists of more than 1700 miles of paved state highways and some 6000 miles of hard-surfaced county roads.

... Industry finds this highway system of great value in efficient distribution of products to the vast over-night trucking market contiguous to New Jersey.

Write for your copy of the new digest about New Jersey—"An Industrialist's View of the Crossroads of the East"—Box B, Public Service Electric and Gas Company, 70 Park Place, Newark, New Jersey.



## ALLOY TROUBLE?

If you have missed the special Iron Age series of five articles on boron steel which appeared last July and August you may want to order a reprint.

A 30-page reprint booklet covers the following:

1. Boron steel alternates for standard grades. 2. Advantages and limitations of boron steels. 3. Hardenability charts. 4. Case studies of boron steel use in plants making gears ... pinions ... springs ... bolts ... axles.

**A limited quantity of reprints is still available.**

Price 50¢ each.

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Reader Service Dept.

100 East 42nd St., New York 17, N. Y.

## Technical Briefs

### Steel Founders:

Casting production for 1952 may hit new high, Society reports.

A new record high in production of steel castings was forecast for 1952, in reports at the 50th anniversary and annual meeting of the Steel Founders' Society of America held in Chicago recently. Officers were elected and presentation of gold medal awards was made.

H. A. Forsberg, vice-president, Continental Foundry & Machine Co., East Chicago, Ind., was elected president of the Society. Mr. Forsberg will also serve as chairman of the National executive committee.



H. A. Forsberg

The Lorenz Gold Medal, established in 1938 in memory of the Society's first president, Frederick A. Lorenz, was awarded to James Suttie for his contributions to the industry.

Mr. Suttie, vice-president of American Steel Foundries, Chicago, has served on practically every national committee formed for the solution and handling of problems affecting the steel foundry industry.



J. Suttie

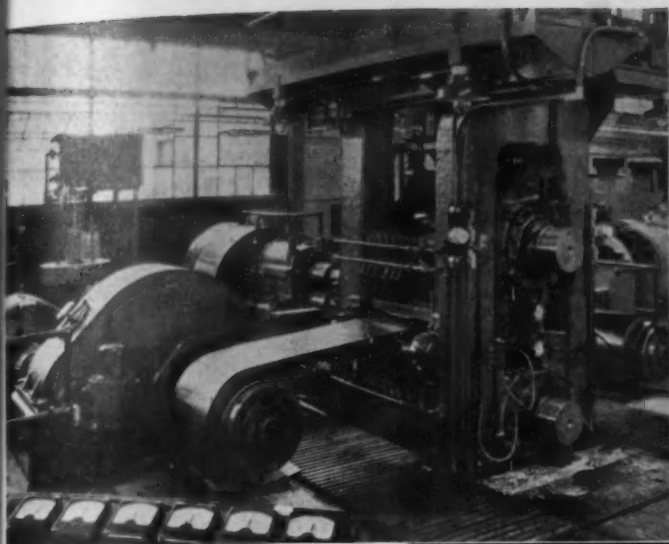
The Society's Technical and Operating Medal for 1951 went to Luther A. Kleber, vice-president, manufacturing, General Steel Castings Corp., Granite City, Ill. The award was in recognition of Mr. Kleber's outstanding service for the industry.



L. A. Kleber

Special mention, as an outstanding steel foundry achievement, was made of Mr. Kleber's recent development and application of an all-purpose sand in the molding of large castings.

Turn to Page 142



**The COLD ROLLED  
STEEL STRIP you  
buy from Reliance  
IS COLD ROLLED  
STEEL STRIP in  
name and in fact**



**DEPENDABLE DAN**  
U.S. REG. U.S. PAT. OFF.

NPA Warns—predictable supply of steel mill "home" scrap and end-product "prompt" scrap inadequate to support scheduled open hearth operations in 1952.

Only dormant scrap can overcome deficit.

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**Reliance** STEEL STRIP is rolled on STRIP mills. For example, the one pictured above. It is produced to strip gauge uniformity and accuracy. It is made in a full range of tempers from deep drawing to hard. Usually bright, it may also be had in satin finish.

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## —Technical Brief—

### Plating:

Nickel plated on aluminum pro-  
pellers . . . Withstands corrosion.

Aluminum propellers coated with  
nickel have been successfully used  
by the Navy on Martin P5M-1 fly-  
ing boats and Grumman UF-1 util-  
ity amphibians.

Behind development of the suc-  
cessful method of plating nickel  
on aluminum are 2 years of re-  
search by Hamilton Standard Div.,  
United Aircraft Corp., and Bart  
Laboratories, Inc.

A major problem in the coating  
of aluminum with nickel has been  
solved, permitting a stress-free,  
hard and resilient coating. A  
synthetic rubber compound de-  
veloped by Hamilton Standard is  
used to establish a bond, previ-  
ously unattainable, between the  
aluminum and nickel plate.

New blades have withstood test-  
ing conditions in which unplated  
blades were severely eroded. In  
the tests, more severe than actual  
service, unplated blades lost  
about 20 pct of their tip area.

Good adhesion in the plating  
process are possible, giving high  
adhesion between the organic syn-  
thetic base and the nickel and is  
reported to stand up under a wide  
range of temperatures.

Bond material is sprayed onto  
aluminum to the required thick-  
ness. After drying, the piece is  
plated with nickel by conventional  
means, the plate thickness depend-  
ing upon requirements. At pres-  
ent, a component can be plated in  
about 24 hr.

Satisfactory results are re-  
ported with all aluminum alloys  
used to date. Finished pieces have  
a hardness of 400-450 Vickers and  
are stress-free. Intricate designs  
can be given uniform and accurate  
protection of interior and exterior  
surfaces. Finished pieces have a  
semi-bright surface which can be  
polished chemically or mechani-  
cally.

Turn to Page 145



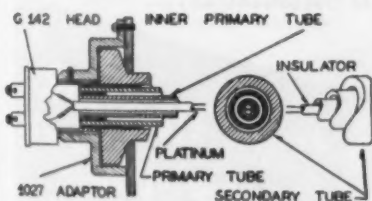
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Platinum, Platinum-Rhodium  
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A background of many years of experience and "know-how" go into the production of Gordon Platinum, Platinum-Rhodium Thermocouples. From this experience has evolved the Gordon policy which calls for the utmost in quality and service, the utmost in value to clients. That is why Gordon platinum wire is carefully checked for thermocouple accuracy against a master thermocouple...calibrated and certified by the National Bureau of Standards.

The porcelain insulation and protecting tubes which go into a complete thermocouple assembly are of the finest quality obtainable. They are the best known means of preventing contamination of the elements which result in false e.m.f. values. Also, the Gordon G-142 head which goes



into a complete thermocouple assembly is light in weight and permits easy replacement of new elements into a protecting tube assembly.

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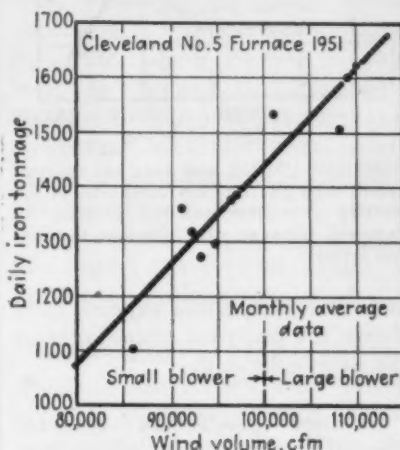
## —Technical Briefs—

### Blast Furnaces:

Republic uses high top pressure in furnaces successfully.

Republic Steel Corp. now has seven furnaces operating under elevated top pressure and another, a twin to Cleveland No. 5, about to be blown in.

This represents approximately one-half of Republic's iron production. Two of these furnaces are far past their expected lining life.



WIND VOLUME for the Cleveland No. 5 furnace at Republic is compared with daily iron tonnage during 1951.

Operators believe they are still producing iron because of the smoothness of operation possible with elevated top pressure.

Two other furnaces have been relined and are well on their way into their second elevated top pressure campaign.

Materials are now on hand to convert one or more furnaces to top pressure operation in the near future.


Two furnaces in other steel companies in this country and another in Britain have been equipped to operate at elevated top pressures. Several more are in the process of construction.

Early in 1951 engineers of the Stalin Metallurgical Combine in Magnitogorsk converted the sixth blast furnace for high pressure operation.

These are the first that have been done in the Soviet Union. For

# LEBANON Castings in Stainless and Special Alloys... require Control in Core-setting



There is just no "good enough" way to set cores, for close tolerances must be held if costly, time-consuming, corrective work is to be eliminated—and time is vital today. Core-setting and its companion step, core-making, call for precise skill and infinite care, yet these are but two of many production procedures followed with such care by all Lebanon craftsmen to produce CIRCLE  castings of controlled high quality.

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## PRESSURE VESSELS Immediately Available

8—10' ID dia. x 40' x 3" shell.  
Heads 3 1/2". Test Pressure 900  
psi. WP 600 psi.

7—10' ID dia. x 40' x 2 1/2" shell.  
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psi. WP 500 psi.

1—6' ID dia. x 40' x 2" shell.  
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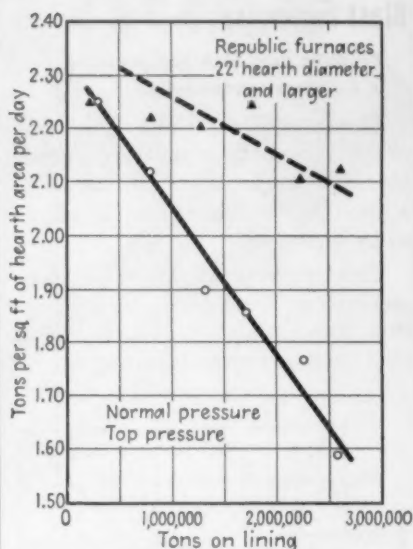
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## Technical Briefs



TONS ON LINING and tons per sq ft of  
hearth area per day are compared in this  
plotting of normal and top pressure for  
Republic furnaces of 22 ft hearth diam  
and larger.

over one year, these experts have  
shown the practical advantages of  
the new technology.

Average production increase  
from the same shaft volume was  
20 pct. Coke consumption per ton  
of iron and dust loss was decreased  
by 11 and 22 pct respectively, it is  
reported. Plans are believed under  
way to convert two additional fur-  
naces during 1951.



DYNETRIC BALANCING machine uses deli-  
cate electrical impulses to detect slightest  
unbalance in torque converters for fluid  
drive units at Chrysler's Highland Park  
Plant. Stroboscopic light pin-points un-  
balance. Metal is spot-welded directly to  
converter housing to bring it into balance.

## QUANTITY PRODUCTION OF GREY IRON CASTINGS

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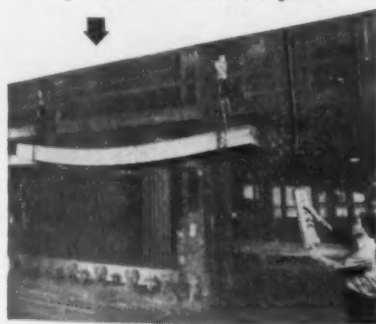
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MACHINE  
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OVERHEAD TRAVELING CRANES

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CRANES**

## Technical Briefs

### Skylights:

White, translucent, 1/4-in. plastic sheets replace glass.

Replacement of wired glass skylight glazing with sheets of corrugated acrylic plastic at the Crown Can Co. plant in Philadelphia has permitted high annual cost savings and increased worker safety.

Frequent cracking of the corrugated wired glass, a heat-absorbing type, developed on the southern exposures of large monitor-type skylights, where glazing is subjected to wide and sometimes rapid changes in temperatures. Replacement had to follow immediately after each failure, to eliminate the danger of glass falling on workers, and to prevent leakage because of the critical nature of plating operations conducted.

More than a year ago, two sheets of corrugated white translucent Plexiglas, 1/4-in. thick, were installed on test. When the weather-resistant material had been in place for a full year, the plant standardized on use of the acrylic plastic for replacement whenever breakage developed in the existing glass sheets. The acrylic plastic diffuses light more evenly than glass, and reduces sky glare.



"Frankly, I doubt if he'll even be interested."



"Trifles make perfection but perfection is not a trifle"—Michael Angelo

## Not a Trifle

And it's no trifle to manufacture precision balls within ten millionth of an inch. The skill, perfection and preciseness applied to the manufacture of every Universal Ball is the reason why those who know fine balls best, will not accept less than Universal's precision perfection.

Universal Balls are 100% inspected and individually gauged. All high precision small balls made in this plant are slowly inspected under magnification.

If you want precision balls of unexcelled surface finish, sphericity, size accuracy and extremely fine tolerances, specify Universal Precision Balls.

They are the best balls for applications where high speeds, silent operation and minimum torsional resistance are determining factors.

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PRECISION BALLS OF CHROME  
AND STAINLESS STEEL, BRONZE  
AND SPECIAL METALS.

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Telephone, Willow Grove 1200



## Chrome Ore:

**Industry standard sample established in cooperative study.**

A standard industry sample for metallurgical chrome ore has been established through a cooperative study by several leading metallurgical, commercial, and chemical laboratories in this country, Canada, and the Union of South Africa.

The careful analysis of the ore, containing 50.96 pct  $\text{Cr}_2\text{O}_3$ , for chromic oxide, iron, silica, alumina, and magnesia has filled an industry need for a reference standard having a chromic oxide content higher than that of the chrome refractory containing 36.97 pct  $\text{Cr}_2\text{O}_3$  now obtainable from the National Bureau of Standards.

Portions of the sample and copies of the analysis certificate are available without charge to industrial and commercial laboratories upon application to Andrew

S. McCreath & Son, Harrisburg, Pa.

The sample was prepared by thorough mixing of a finely ground Turkish chrome ore. After preliminary tests for chromic oxide and iron established its uniformity, samples were distributed to the cooperating laboratories for analysis.

Analyses were correlated and the analysis certificate prepared by the Research Laboratories of the Mutual Chemical Company of America, Baltimore, Maryland.

## Quiet Cable:

**Noise free cable developed at National Bureau of Standards.**

An instrument cable free of spurious electrical signals due to mechanical shock and vibration has been developed by Dr. T. A. Perls of the National Bureau of Standards Office of Basic Instrumentation.

The noise-free cable is the result of a recent study sponsored at

NBS by the Department of Defense and the Atomic Energy Commission. A detailed theoretical explanation has been formulated for the generation of the spurious signals, as a result of the study.

Signals or "noise voltages" present a problem in many types of instrumentation work where cables are subjected to mechanical forces. They interfere with measurements of air and underwater explosion pressures, and with determination of acceleration in shock and vibration studies.

Such signals also adversely affect the performance of crystal-type microphones, hearing aids, and phonograph pickups and other high-impedance devices used in measurement and control.

Experiments were set up to compare the performance under dynamic stress of various experimental and commercial coaxial cables consisting of an inner conductor, an insulating dielectric, and a conducting shield.

Cables were connected between a small piezoelectric accelerometer and a cathode follower. Output of the cathode follower was recorded on several recording instruments.

Standard test for cable noise consisted in grasping a short section of the cable and subjecting it to severe strains by twisting and bending, while making sure that no strains or motion were transmitted to the accelerometer itself. Another test consisted in alternately compressing and releasing a short section of the cable.

## Plant Location

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in Southern New Jersey—where you've enjoyed our scenic and resort sights.

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from Camden to the Cape—right at your desk. The Site-Map spots 200 sites within 3 hours of U. S. Steel, within 2 hours of National Steel site, the new Turnpike, Delaware Memorial Bridge, America's richest markets.

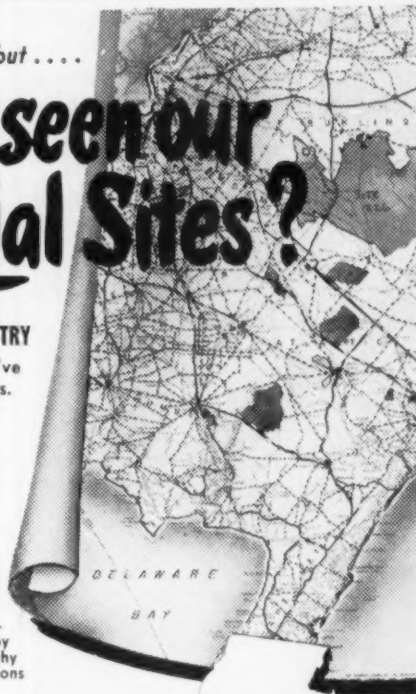
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3,000 sq. miles of Opportunity



"Sorry, Benson, but you and your men are being replaced—we need men with more modern ideas."

## —Technical Briefs—

### New Device:

Machine regrets with substantially uniform response.

Development of a device which may be of considerable importance in the design and development of wrung hands and sad sacks has been reported by Anon E. Muss in a recent issue of "Carnegie Technical" of the Carnegie Institute of Technology.

The Model 2-B Regrettor is a lightweight unit developed for use by persons whose capacities for regretting are below normal or who have more to regret than can be conveniently handled without aid.

With this device it is possible for the user to have his bad moments regretted for him, and he is meanwhile left free to engage in activities which may be regretted later.

Equipped with a dynamically stabilized microsynchronous effort bender, the machine will regret in accordance with the wishes of even the most talented of bunglers.

A simple changeover permits the Regrettor to rue. It may also be adjusted to give pangs of regret if desired. All frequencies up to 20 pangs per sec are obtainable. The unit's mounting is shockproof and will withstand the impact of the machine which sometimes produces violent motion when suffering pang regret of high amplitude.

Helical spring suppressors suitably placed about the frame of the mounting aid in reducing acoustic shock and serve to protect the tubes from damage.

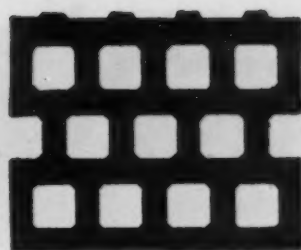
Designed to match a wide range of emotional impedance, the machine's actual values depend upon user's temperament coefficient.

Output impedance response is substantially uniform over the entire sad gamut of emotional range, being less than 2db down at the perfunctory regret end and 3db down at the black despair-end.

When operating under sustained racking sob conditions, excess energy is dissipated in a load circuit of four 600 ohm Utter Futility type pads.

## Perforated metal screens

*for any requirement*



**W**ITH facilities for producing any shape and size of perforations in any commercially rolled metal, of whatever gauge desired, Hendrick can furnish the most suitable form for a specific screening application.

To best meet certain requirements, Hendrick developed the "squaresound" perforation illustrated. Other standard forms include round, square, hexagonal, diamond and slot perforations in hundreds of sizes of openings. Write for full information.



Perforated Metals  
Perforated Metal Screens  
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Architectural Grilles  
Milco Open Steel Flooring,  
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*Manufacturing Company*

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**SPECIAL WASHERS** to your specifications. Any size . . . any metal . . . any quantity. More than 30 years of specialized experience in designing and manufacturing Special Washers . . . more than 12,000 sets of tools at your disposal.

**SMALL STAMPINGS** in any metal . . . any quantity. Hundreds of satisfied customers are testimony to our high quality and reasonable prices. Send us your specifications or prints.

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You're sighting on the moose through a Weaver Scope, made by W. R. Weaver Company, El Paso, Texas

## The Superior Tube That Puts You "On Target"

Hitting specification bull's-eyes to help our customers hit their production targets is a Superior specialty.

A case in point is illustrated above. The customer, W. R. Weaver Company manufactures high-quality telescopic sights for sporting and target rifles. The carbon steel tube in which the lens elements, reticule and eye piece are mounted must be strong and rigid. Tube material must have excellent machining qualities to permit fast, economical, precision working. Because salability depends a good bit on fine appearance, the tube must be extremely smooth and free from pits and scratches. This is particularly true of the larger sizes where tube ends are expanded, making imperfections more evident. Inside surface must also be smooth and to accurate dimensions.

Ordinarily you might expect tubing to fit such requirements for smoothness plus temper and machinability would be a "premium" item carrying extra charges for special handling.

Not at Superior. Here we can take the most exacting specifications in stride because of our experience and "know-how" backed by highly developed production equipment and extensive research and testing facilities.

If you have need for fine, small tubing to do a tough job well, check with us. We can probably fill your requirements from the stocks of our distributors who are located in principal cities. Write Superior Tube Company, 2004 Germantown Ave., Norristown, Pennsylvania.

BE SURE ABOUT TUBING—  
SPECIFY

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### Beryllium Copper:

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## Consumers Face Higher Prices, Big Wage Demands

**WSB recommendations sure to bring inflation, if granted . . .  
Good-sized price boost coming . . . Steel wage pattern will  
become basis for minimum bargaining . . . Production record.**

Steel consumers will be hit two ways as a result of the huge steel wage package recommended by the Wage Stabilization Board. They'll have to pay a good deal more money for their steel. And they'll have to face whopping union wage demands—geared to the pattern-setting steel settlement as a “bargaining minimum.”

Size of the WSB recommendations blasted any lingering hope Washington stabilizers might have held that they could limit the steel price increase to Capehart adjustments. These would have allowed steel prices to advance about \$2-\$3 per ton. But WSB recommendations, if accepted, would raise steelmaking costs \$12 or more a ton. That's why prices are the biggest roadblock to agreement.

**Billion Bucks**—WSB figures indicate the suggested wage package would cost the steel industry 26¢ per hr. But industry calculations place the cost at 30¢ an hr. The industry adds another 30¢ for indirect costs. For the steel industry alone these higher costs would total about 1 billion dollars a year.

As expected, the case has bounced to the White House. President Truman holds the key to future steel production. If he okays a sizable steel price rise, we'll get continuing steel production—with inflation. If he refuses, the steel companies will reject WSB recommendations and the steelworkers will strike Apr. 8. In the end, higher steel prices are inevitable; only the amount is yet to be settled.

**Wage Timetable**—This is bad news to steel consumers—but the worst is yet to come. Early this

week the United Steelworkers of America served notice it expects to win similar agreements for half a million workers in steel fabricating plants. The same union represents aluminum workers, whose wage negotiations have been bogged down pending development of a “pattern” in the steel case. It is expected that the union will try to establish WSB recommendations as a “bargaining minimum” in all these negotiations.

Then John L. Lewis will be around trying to hammer out just a little more for his United Mine Workers. By this time the sixth round wage pattern will be pretty well set, though it may take company accountants some time to figure their new wage bills.

**Inflation Road**—Steel consumers can not be expected to absorb higher steel costs and terrific new wage packages along the lines recommended by WSB. They in turn will have to seek higher prices if they hope to keep their heads above water.

Inflationary ramifications are infinite. A steel settlement along recommended lines would set off a chain of cannon crackers that would blast present efforts at wage-price stabilization right out of the picture. It would take many months for the chain reaction to run its course. It is this danger that sent Defense Mobilizer Wilson flying to Key West to confer with the President. Out of their talks should come the answer to the big question—how much inflation?

**Market Calm**—As the steel industry passed one strike crisis and entered another, there was a new

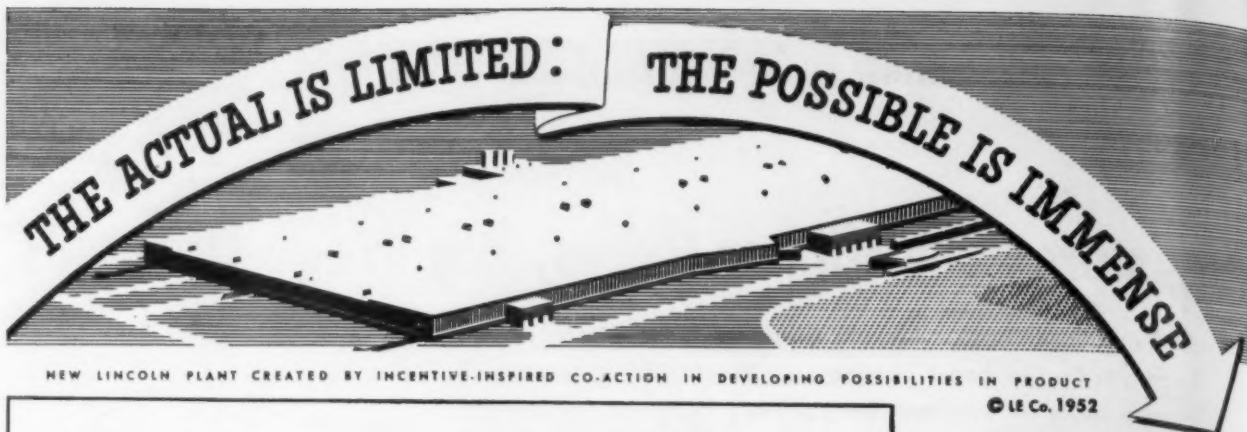
flurry of consumer buying. But this was limited to consumers still holding unused Controlled Materials Plan tickets.

Renewed consumer interest was noted particularly in Detroit, where auto companies recently were permitted bigger quotas. At first they didn't think they needed much more steel to make the extra cars. But, after taking stock of the situation, they have begun to place additional orders. This extends even to slow-moving items such as sheet.

But government controls leave the great bulk of steel consumers helpless to hedge against the possibilities of a strike and higher prices. Most of them have already placed orders against all CMP tickets allotted them. Many have developed a fatalistic attitude and refuse to become alarmed over something they can do nothing about. Result: the steel market has stayed calm in the face of strike crisis.

**Higher Output**—Steel company precautionary measures to prevent costly disaster in event of strike last week will cost them several thousand tons of pig iron. Steel-making losses will be negligible. By the time the strike deadline was extended, banking of a number of blast furnaces had already commenced. These furnaces were returned to production with loss of about a day's output.

Steelmaking operations this week are scheduled at 102.5 pct of rated capacity, up half a point from the previous week. If maintained, this rate will yield the greatest amount of steel ever produced in a single week. Feeling that it may be producing on borrowed time, the industry is straining to pour every ton of steel it can. Mills are buying good scrap when offered but aren't pressing.



## HOW TO GUARANTEE STEEL DESIGNS

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Lincoln's "Fleetwelding" Bulletin '444 gives latest data on correct currents, electrodes and speeds for Standard Procedure welds.

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Compression . . . . .	80,000 psi
Shear . . . . .	50,000 psi
Used by Designer	
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**Solid, one-piece construction**—Standard procedure welds fuse parts together to give complete continuity to product details.

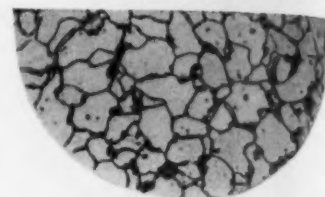


**Ductile**—Welds duplicate properties in mild steel to resist shock and impact . . . permitting lower safety factors in design.

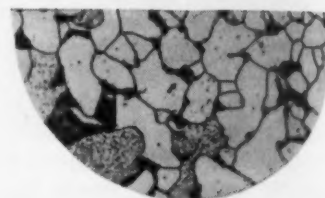


**Strong**—Even welds made deliberately inferior in quality are stronger than parent steel members.

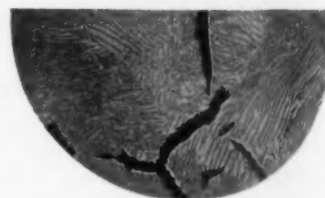
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## Market Briefs

**Contract Rules Final**—U. S. Renegotiation Board has issued its final revision of rules governing renegotiation of all government contracts in excess of \$250,000. One of the principal revisions is a provision permitting manufacturers to obtain higher prices to offset the risks that his government business may encounter in a saturated market following the present emergency. Renegotiation Board says it also will take into consideration such other risks as temporary sacrifice of civilian markets, delivery guarantees, and quality of performance guarantees. Deadline for the filing of renegotiation forms by manufacturers having fiscal years ending prior to Jan. 1, 1952, is May 1.

**Strategy of Silence**—Coal operators still have received no word from John L. Lewis indicating a desire to terminate the present contract of United Mine Workers of America. The contract was written to expire Mar. 31, but automatically continues in effect for 60 days after he serves formal notice. (Add 60 days to whenever notice is served.) If past experience is any criterion, Mr. Lewis will try to win as much as the steelworkers get—and just a little more. But now he's waiting to see how much the steel union *does* get.

**Hoarding Verboden**—Improved scrap collection in Germany during the first 2 months of this year is believed to be partly due to steelworks declaring hoardings because of the threat of legal action. A draft order for the strict control of scrap recovery has been ready for signature by the German Minister of Economics since the end of January. Provisional estimates put scrap collection in January and February at an average of 40,000 tons in each month. This means that Anglo-American quotas for April will be raised to about 36,000 tons.

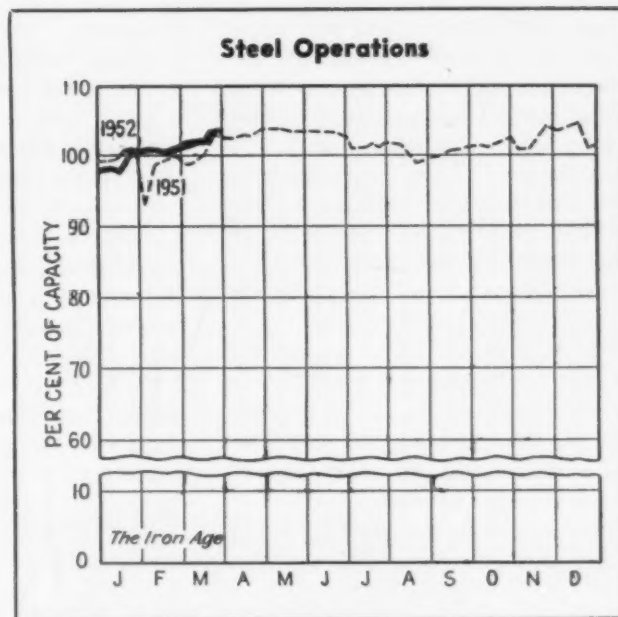
**Cost Down**—Price of General Electric Co.'s atomic hydrogen welders has been cut \$200. Raymond C. Freeman manager of GE's Welding Dept., said the reduction was the result of more efficient production methods, plus redesign allowing the use of standard welding equipment parts. Delivery time is now 20 weeks, but GE expects increased output to cut this in half.

**Price Cuts**—Serval, Inc., last week announced reductions of from 4 to 10 pct in price for its galvanized steel water heaters. Company spokesman said the cuts were made possible by greater availability of steel at reduced prices.

**Car Quotas** — Automobile manufacturers will be permitted to make 1,150,000 passenger cars and 300,000 trucks during the third quarter, government control officials said this week. National Production Authority said that third-quarter materials allocations will provide for not less than 1,050,000 passenger cars and 270,000 trucks. If more materials are available for allocation later or manufacturers can stretch inventories a little, the higher production figures will be permitted.

**Price Listings**—Steel Price listings and other price tables (beginning on p. 164) in the Markets Section have been revised for easier use by readers. Broken down geographically, prices can be more readily determined. Rapid, convenient producer identification is made possible through a new "key to producers."

**Aluminum Expansion** — Aluminum Co. of America will expand fabricating facilities in the Pacific Northwest. Immediate project calls for modernization and revision of ingot casting facilities at Vancouver Works at a cost of \$1.2 million. Later the company will extend and diversify fabrication of primary aluminum at Vancouver.



**District Operating Rates—Per Cent of Capacity**

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Waukegan	South	Ohio River	St. Louis	East	Aggregate
Mar. 18 .....	106.0	105.0*	102.0	100.0	103.0	104.0	100.5	* 101.0*	100.0	102.0	98.0	84.0	91.5	102.0
Mar. 22 .....	104.0	104.5	102.0	100.0	101.0	104.0	98.0	104.0	101.0	102.0	94.0	84.0	106.5	102.5

Beginning Jan. 1, 1952, operations are based on annual capacity of 109,587,670 net tons.

\* Revised.

March 27, 1952



## Nonferrous Markets

### Look Further Into Aluminum Deal

**Fabricators air views on recent proposals . . . Hint possible high-level pressure for Canadian contract . . . U. S. industry not credited with expansion initiative—By R. L. Hatschek.**

Further expansion of the country's aluminum supply is still being kicked around in Washington (see page 71). Last week aluminum fabricators were asked their ideas on the subject of further domestic expansion, future imports from Canada and what sort of stockpile might be required. Suggestions varied all over the lot.

Yet another meeting on the subject was held early this week between defense officials and Congressmen. That this snowball continues to roll despite the fact that it could pick up no momentum from actual and potential aluminum producers may be significant.

**Top Level Pact?**—There is some feeling that all of this pressure for a firm agreement for Canadian aluminum stems from some sort of agreement at diplomatic levels. Nothing concrete is in evidence but the Canadian government would certainly welcome a guaranteed market for some of the production scheduled to come from Kitimat. And U.S. officials have certainly not dropped the idea as yet.

Defense Production Administrator Manly Fleischmann is on record as feeling that the proposed long-term (1955 to 1959) agreement with Aluminum Co. of

Canada should not be pushed through on the basis of the Defense Production Act but should rather be subject to Congressional approval. Senator Fulbright, D. Ark., is expected to oppose U.S. underwriting to a Canadian import agreement.

**Not matched**—One discrepancy pointed out by aluminum industry men is that the proposals are based on anticipated civilian and military demand by 1960 and all current expansion in the industry is slated for completion by 1954. Apparently the U.S. producers are not being given credit by the planners for any expansion initiative beyond that date.

The producers have been given little credit for being able to feel out future markets and future demand—something they must do in the normal course of business.

**Nearer Future**—But what of this year's supply? That is the important question for aluminum consumers right now. All of the Washington discussions are aimed at a supply which couldn't be tapped for increased supplies until 1955.

National Production Authority states that third quarter allocations will be "generous" and aluminum will probably be decontrolled during the first quarter of

1953, not later than second quarter. Some NPA sources indicate that the decontrol might possibly even come late this year.

**Still Urge Switch**—NPA once again urged a switch from "scarce and hard-to-get materials" to aluminum. This time the suggestion was made to manufacturers of lubrication equipment. The agency said there would be 35,000 tons more aluminum available in the third quarter than the second.

**Copper Prices**—Defense Materials Procurement agency has signed another contract for domestic copper at well above the 24.5¢ ceiling price. This one, at 30.53¢ per lb, is with the Banner Mining Co., Tuscon Ariz., for 2 years' production or nearly 5.5 million lb. This contract, the third of its nature, will permit these high-cost operations to continue rather than fold up because of a prohibitive cost-price setup.

No new developments have taken shape regarding the 6¢ increase Chile is reported to be seeking but opposition in this country is rising. Once again U.S. industry is asking why Chilean copper should be worth more than American copper. Domestic copper people feel that if American taxpayers must pay more for the red metal then it should be paid for increasing domestic production. They have a point.

**No Copper Decontrol**—Despite optimism on aluminum decontrol. Manly Fleischmann said recently that government controls on copper must be retained. He pointed out the small arms ammunition demand and stated that this was the key to military requirements for the metal. Should the war in Korea come to an end, ammunition goals would soon be reached, he added. The U.S. was termed a "have not" nation regarding copper by another DPA spokesman.

#### NONFERROUS METAL PRICES

	Mar. 19	Mar. 20	Mar. 21	Mar. 22	Mar. 24	Mar. 25
Copper, electro, Conn. ....	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered ...	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York ....	\$1.215	\$1.215	\$1.215	....	\$1.215	\$1.215
Zinc, East St. Louis .....	19.50	19.50	19.50	19.50	19.50	19.50
Lead, St. Louis .....	18.80	18.80	18.80	18.80	18.80	18.80

Note: Quotations are going prices.

- **NON-FERROUS METALS**
- **ORES AND MINERALS**
- **METALLIC RESIDUES**
- **METAL SCRAP**
- **FERRO ALLOYS**



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## Iron and Steel Scrap Markets

### Shipping Woes Sure with Steel Strike

**Trade breathes easier when strike deadline passes . . . Now it's up to White House . . . Shipping during strike will be tough . . . Discount rumors of below-ceiling price chances.**

The scrap industry relaxed its frown of worry as the Mar. 23 deadline for a steel strike passed uneventfully. Government recommendations for a steel union wage increase were so agreeable to Philip Murray he got a strike postponement to Apr. 8. without any trouble. Now, only action of the White House forcing Office of Price Stabilization to grant an adequate steel price rise can avert the strike. Defense Mobilizer was this week conferring with the President on this matter.

If a strike hits the steel industry, its repercussions will fling scrap movement off the track. Judging from past experience, it is difficult to haul scrap into strike-bound mills. Railroads may again refrain from crossing picket lines and refuse to take the chance of not being able to unload freight cars. This would result in a practical embargo on mill shipments. The scrap trade is shipping all it can now.

Stockpiling scrap at outside points has been tried before. Some mill sources indicate it may be tried again—but they don't like this procedure. One mill buyer told THE IRON AGE that when it was time to haul scrap from a collection depot to the plant it had somehow been reduced in quantity. Setting up these collection depots is troublesome and expensive.

Rumors that the steel industry will seek under-the-ceiling sales of steel scrap have been circulating. These probably originate from reports of a "weakening" market. The market has no right to be weak. Mill stockpiles are still flat compared to the safe scrap mountains of yesteryear.

At any rate, the fact that mills still have low inventories will work against any lowering of steel

scrap prices. Some mill buyers are well aware that they can't take chances with a delicate shortage market and by pushing for lower prices, dry it up. It's true that mills will shave costs by continuing to limit freight and discouraging in-transit preparation.

But the fact remains that the scrap shortage is far from over.

**Pittsburgh**—Overall scrap inventories continue to improve this week. Nevertheless the better grades of openhearth and electric furnace material were still relatively tight. One steel producer with a district inventory of 14 days had only 6 days supply at a plant where better material is a must. Consumers are hoping for a break in price of demolition scrap such as locomotives on the hoof.

**Chicago**—Steel scrap continued to move well. Mills' inventories were running well over 2 weeks. Foundries were cutting inventories, though still doing some small buying. Borings and turnings appeared weak, with some cutting of freight springboards. Despite cuts in electric furnace production, these scrap grades continued to move well. Inspection is rigid. Cast movement continued slow.

**Philadelphia**—The market here is slow. Yard intake continues poor and consumers remain very fussy on the quality of bundles. It is generally felt that openhearth will accept some material during a strike if it is possible, perhaps even piling scrap outside their gates. Prices remain the same, except that clean auto cast is now selling at \$53 to \$54 delivered.

**New York**—Scrap movement is described as fair, with no dealer accumulations reported. Mills are buying but not pressing. Bad weather has hurt collections. Allocations continue in this district. The trade passed the Mar. 23 strike deadline and sighed with relief at postponement. Strike fear has lessened but all are anxious to ship. Cast remains lifeless.

**Detroit**—Uncertainty of the steel strike was felt indirectly by scrap dealers although it had little immediate effect on the market. Most large dealers made arrangements to keep up their shipments to steel mills even if the strike materialized. Cast scrap continued under ceiling price but so little was moving that below ceiling prices lost most of their significance.

**Cleveland**—Scrap shipments were off slightly last week due to the anticipated steel strike, stricter grading by the mills, and rainy weather. With mills faced with the possibility of a strike they have not been too anxious to place additional orders for scrap. One small Ohio producer has reportedly stopped shipments due to a high inventory. Some heavy foundry operations are reported on the upgrade, a trend which if continued, may strengthen the cast markets.

**St. Louis** — Improved weather brought more scrap in last week. Movement from more remote points may slow down as in-transit preparation is discouraged and consumers hold to \$4 a ton freight limits. Brokers still can get scrap within the \$4 radius. Inspections are tough. Grey iron foundries are out of the market.

**Birmingham**—Heavy melting scrap is in fairly good supply in this district, but dealers say this situation may not last long because of allocations being received from Northern mills for scrap from Birmingham.

**Cincinnati**—The scrap market here was on the quiet side this week. Mills are receptive to local openhearth and electric furnace grades but are still restricting long freight rates and in-transit preparation. Mill inventories are still inching upward with little buying taking place, excepting selected grades from regular shippers. One mill was expected to purchase a tonnage of motor blocks this week.

**Boston**—Scrap trade here does not appear dissatisfied with movement of steel grades—which is described as good. The market does not seem to have lost any of its vigor, cast grades excepted. Unstripped motor blocks can find no market.

**Buffalo** — Below-ceiling price of cupola cast slipped another \$1. Improved weather spurred flow of steel-making scrap. Buying tension seemed to ease.



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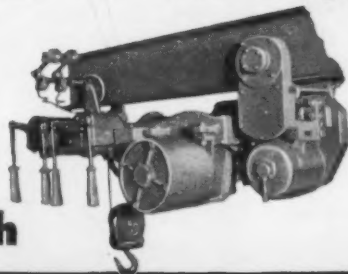


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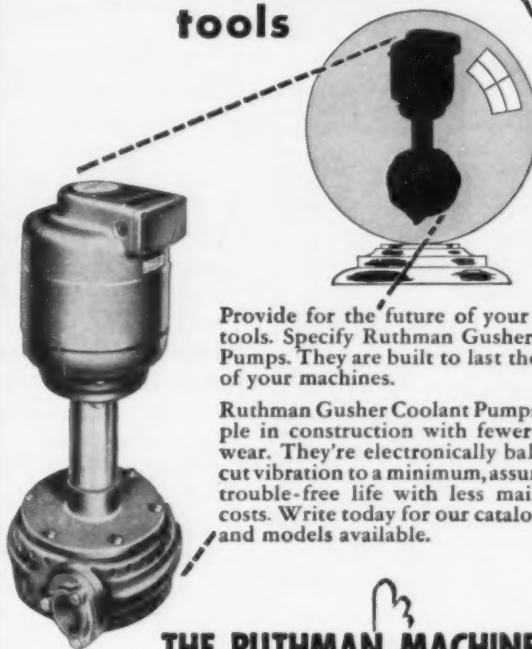


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# The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

**Coasting Along**—All markets of used machine tools seem to be coasting along. Dealers are not able to accumulate substantial inventory and the long-awaited defense production pick-up that was supposed to sweep up all of American industry into intense activity has not materialized.

An important market for used machinery people has been somewhat neglected in the distribution of defense contracts. These smaller plants have been double stung by decreasing civilian demand. Some of these firms have managed to wedge themselves into the complexities of war work but a great many are left on the fringes. Consequently, their buying has not been exactly enthusiastic.

**Little Urge to Buy**—Because the rearmament program has been stretched out the smaller plant's urge to buy is not seen as gaining much new life in months to come. Many dealers are now of the opinion that defense, under the new timetable, will not gather up enough momentum to force manufacturers into buying some of the older types of machines.

**Deadly Inertia**—Meanwhile Washington inertia still has Office of Price Stabilization in its enervating grip. No new price book has been published, despite promises of aid to help bewildered dealers comply to the price regulation without expense and trouble. No long-awaited amendment to CPR 80 has been issued. And, as far as some dealers are concerned, prices of some items are too low at present ceilings. The spirit of the Capehart Amendment, permitting inclusion of costs, has been violated.

On CPR 105, a little more enthusiasm is being shown by OPS. It is reported that an amendment proposed by the trade some weeks ago is still being worked on.

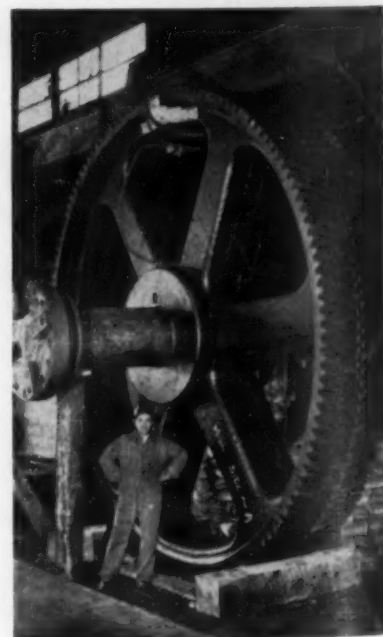
**Foreign Sale**—One of the largest assemblies ever to move from the New Castle, Pa., district was

the 60-in. 3-high sheet breakdown mill sold by Albert Curry & Co., Inc., Pittsburgh, dealers in steel plant equipment, to a Norwegian Steel producer, Norsk Blikvalver, of Bergen, Norway.

The entire shipment, including mill units and an 80-foot pair heating furnace complete with 30,000 refractory bricks, weighed approximately 450 tons loaded on 11 cars.

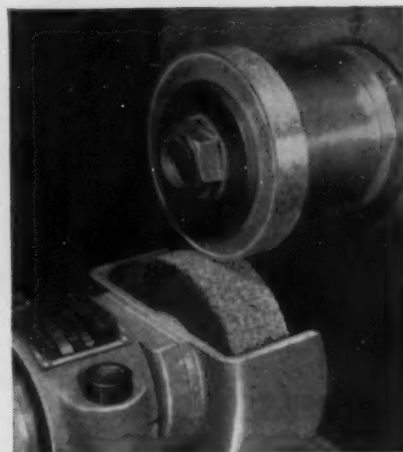
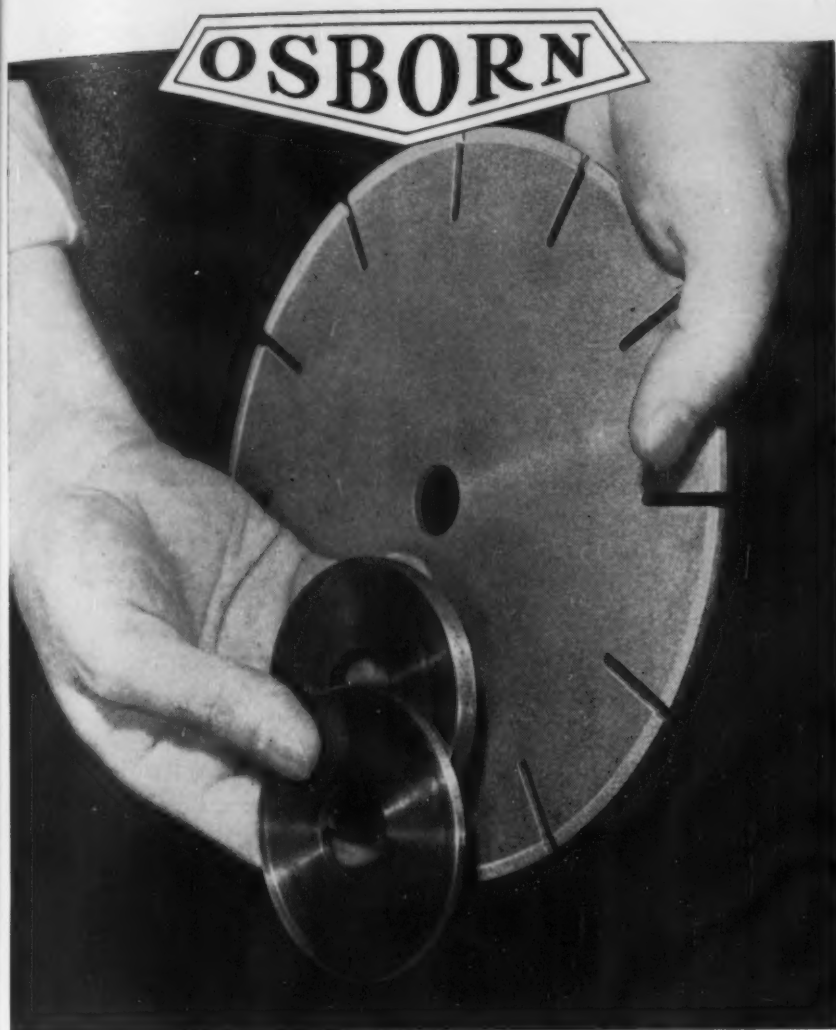
**Hauling Problem**—Special loading and shipping arrangements were necessary in the handling of the larger mill components. Typical was that of the bull gear assembly shown in photograph, before blocking. This 85,000 lb gear is 15'6" O.D. x 3 ft face. Width of clearance is approximately 12'3" and clearance on height approximately 17'6" from rail to top of gear. Blocking alone required six men working for 6 days.

Before the gear could move approval was necessary from 15 railroad inspectors from New Castle, Cleveland, Youngstown, and Pittsburgh. In transit to the East Coast, maximum speed of movement was 15 mph in daylight only. An additional track and sidings were cleared to aid movement.



BULL GEAR . . . heavy hauling job.

# OSBORN



**TRUE THE SURFACE.** With this set-up true two diamond wheels at a time. Surfaces become uniform and perfectly flat. Usually takes about 15 to 30 minutes.



**BRUSH THE MATRIX.** Rotate the two wheels counter to rotation of Osborn wire wheel brush. This dressing removes some of the brass matrix. Leaves the diamonds exposed.



**SEE THE DIFFERENCE.** Two wheels on left show grooves before truing. Surface is arched. Two wheels on right have been true and dressed. Dressing increased cutting action 80%.

## Diamond-saving idea makes them do 80% more work!

*Longer life* and faster production from critically scarce industrial diamonds are being obtained by this method of dressing diamond wheels:

When wheels become grooved and out of square, true them by grinding, two at a time. After truing, mount wheels together in grinder and dress with counter-rotating 8-inch Osborn wire brush. This brushing removes some brass matrix, exposing the diamonds. One plant reports that this increases the wheel's cutting action 80%.

This is typical of many production aids available through your Osborn Brushing Analyst. Call him today or write *The Osborn Manufacturing Company, Dept. 653, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

# Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

March 27, 1952



# A Word of Caution On Steel Inventories

Care with regard to excess inventories is probably always good business, but when the steel supply begins to approach demand, even if only on one or two items, a word of caution may be in order.

Most steel products are still in short supply. And best opinion indicates that it will be months before supply completely catches up with demand. But the supply is about equaling the demand on the smaller hot rolled and cold rolled bars, though larger sizes are still short. Sheets are also beginning to be more available and our stocks are larger and more complete.

This evidence of availability is offset by government claims for more steel to be required by the defense program. However, as there are definite indications that supply is certainly more nearly approaching demand, it becomes more and more desirable

to avoid top heavy and unbalanced inventories. And since the improving supply situation is reflected in warehouse stocks, it becomes safer and more practical to buy steel from warehouse. By thus maintaining a streamlined inventory more capital is available for the operation of your business and the chance of obsolescence and depreciation is minimized.

Unfortunately, our stocks in some lines are still unbalanced from a size standpoint. However, we do advise keeping ahead of the changing situation, ordering the exact kinds and sizes needed from stock, and securing immediate shipment. Our experienced steel men are always ready to counsel with you on matters of procurement, application, and fabrication. So whenever you have a problem or need steel quickly, call Ryerson.

## PRINCIPAL PRODUCTS

**CARBON STEEL BARS**—Hot rolled and cold finished

**STRUCTURALS**—Channels, angles, beams, etc.

**PLATES**—Many types including Inland 4-Way Safety Plate

**SHEETS**—Hot and cold rolled, many types and coatings

**TUBING**—Seamless and welded, mechanical and boiler tubes

**ALLOYS**—Hot rolled, cold finished, heat treated. Also tool steel

**STAINLESS**—Allegheny bars, plates, sheets, tubes, etc.

**BABBIT**—Five grades, also Ryertex plastic bearings

**MACHINERY & TOOLS**—For metal fabrication

# RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT  
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

## Conventions & Meetings

Mar. 30-Apr. 3—American Chemical Society, national meeting, second session, Milwaukee. Society headquarters are at 60 E. 42nd St., New York.

Mar. 31-Apr. 2—American Institute of Mining & Metallurgical Engineers, National Openhearth Committee, annual conference, Hotel William Penn, Pittsburgh. Institute headquarters are at 29 W. 39th St., New York.

Mar. 31-Apr. 2—International Acetylene Assn., annual meeting, Claypool Hotel, Indianapolis. Association headquarters are at 30 E. 42nd St., New York.

Apr. 1-3—American Management Assn., conference on packaging, packing and shipping, Public Auditorium, Atlantic City, N. J. Association headquarters are at 330 W. 42nd St., New York.

Apr. 1-3—Steel Shipbuilding Institute, annual meeting, Palm Beach, Fla. Association headquarters are at 600 Fifth Ave., New York.

Apr. 7-9—American Society of Lubrication Engineers, annual meeting, Statler Hotel, Cleveland. Association headquarters are at 343 Dearborn St., Chicago.

Apr. 7-9—American Management Assn., spring manufacturing conference, Hotel Statler, New York. Association headquarters are at 330 W. 42nd Street, New York.

Apr. 16-18—National Petroleum Assn., semi-annual meeting, Hotel Cleveland, Cleveland. Association headquarters are at Munsey Bldg., Rm. 958, Washington.

Apr. 17-18—American Machine Tool Distributors Assn., spring meeting, Edgewater Beach Hotel, Chicago. Association headquarters are at 1900 Arch St., Philadelphia.

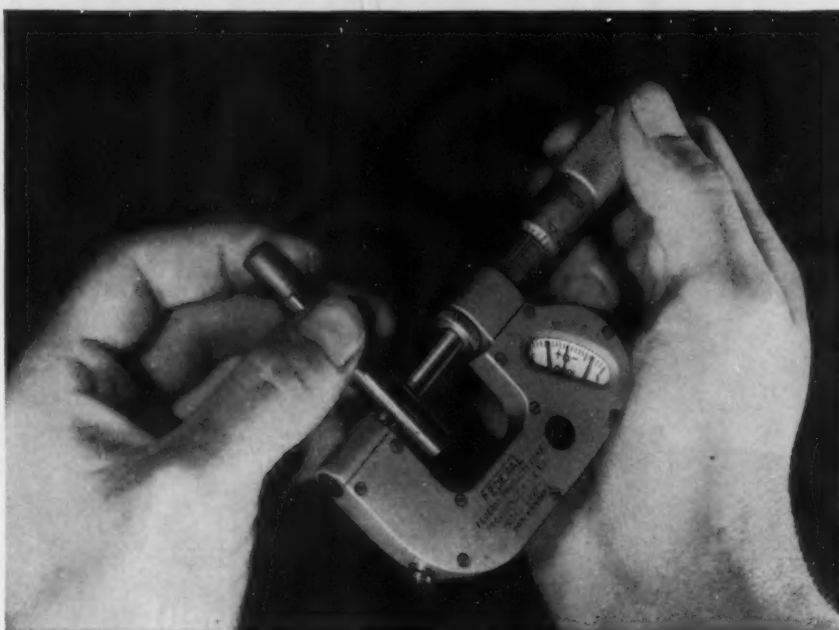
Apr. 17-18—Caster and Floor Truck Manufacturers Assn., spring meeting, Hotel Cleveland, Cleveland. Association headquarters are at 7 W. Madison St., Chicago.

Apr. 20-24—National Industrial Service Assn., annual meeting, Conrad Hilton Hotel. Association headquarters are at 318 Olive St., St. Louis.

Apr. 21-22—American Zinc Institute, Thirty-fourth annual meeting, Hotel Statler, St. Louis. Association headquarters are at 60 E. 42nd St., New York.

Apr. 21-24—Society of Automotive Engineers, Inc., national aeronautic meeting, aircraft engineering display and technical air review, Hotel Statler, New York. Association headquarters are at 29 W. 39th St., New York.

May 4-8—The Electrochemical Society, spring meeting, Benjamin Franklin Hotel, Philadelphia. Association headquarters are at 235 W. 102nd Street, New York.



## the double-duty micrometer!

You're in for a real surprise the first time you use a Federal MIKEMASTER! You'll be amazed at the honest-to-goodness convenience and downright accuracy of this *indicating micrometer*. You'll like its double-usefulness, too—the way you can use it as an *indicating snap gage* for measuring duplicate parts.

Here are the *big* features that make this tool far superior to regular old-style "mikes":

- **BUILT-IN DIAL INDICATOR**  
with clear graduations and easy-to-set Tolerance Hands for quick size checking down to a .0001".
- **CONSTANT ANVIL PRESSURE**  
that eliminates errors of "feel" . . . insures the same high accuracy no matter who is measuring with the Mikemaster.
- **RETRACTABLE LOWER ANVIL**  
for easy (non-scratching) inser-

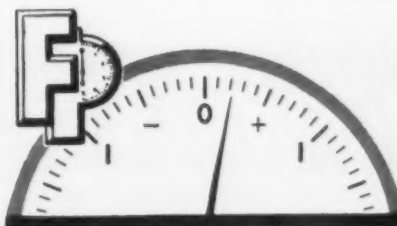
tion of workpieces when checking duplicate parts or inspecting for taper and roundness.

You have to handle the Mike-master yourself to fully appreciate what it can do for you. *Write for a free demonstration.* FEDERAL PRODUCTS CORPORATION, 1133 Eddy Street, Providence 1, R. I.



Actual test proves the MIKEMASTER eliminates errors of "feel":

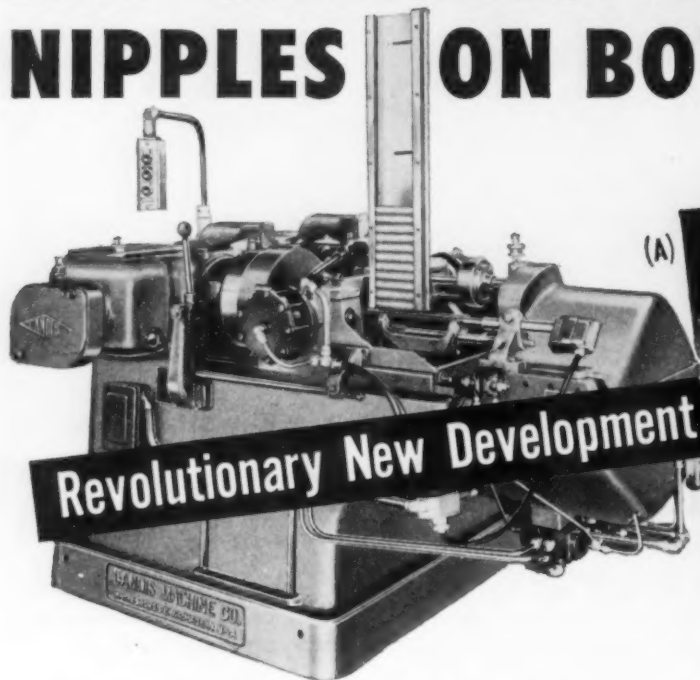
Four people, using a high grade conventional micrometer, measured the same diameter on the same piece three times. All measurements differed from .0002" to .0008". Only one measurement was correct. With the Mike-master in a similar test, *all measurements but one* were exactly "on the nose" and this one showed less than .0001" variation.



# FEDERAL

Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES.

# AUTOMATICALLY THREADS, REAMS AND CHAMFERS CLOSE AND SHORT NIPPLES ON BOTH ENDS !!!



The new LANDIS Automatic Close Nipple Machine allows mass production of commercial standard close, short, and special short nipples without manual handling during the production cycle. A single operator can supervise two or three machines, depending on the nipple length, for he must only fill the magazines with blanks and remove the finished nipples when ejected.

The production cycle begins when the blanks are released automatically from the magazine on the left-hand carriage, and gripped automatically by the air-operated vise. The left-hand carriage then advances to the thread-starting position and assumes a feed rate of travel equal to the lead of the thread being cut.

At the completion of the threading, and simultaneous reaming and chamfering operations on one end of the blank, the die head and vise open and the carriage returns to loading position, leaving the semi-finished nipple in position for transfer to the right-hand carriage. Mechanical fingers remove the semi-finished nipple, turn it end-for-end (A), and place it in position on the work-rest bar of the right-hand carriage (B).

The semi-finished nipple is then gripped automatically, the operations performed on the unfinished end (C), and ejected when finished (D & E). Simultaneously another blank has begun the cycle on the left-hand carriage.

Write for additional information on this new development in nipple production.

## LANDIS Machine CO.

WAYNESBORO  
PENNSYLVANIA



From all over the Middle West . . .



Manufacturers call  
**CENTRAL STEEL** AND WIRE COMPANY

*for  
metallurgical  
engineering  
assistance*

For years, manufacturers, large and small have looked to Central Steel for help in solving intricate metal working problems.

Questions on machinability, heat treatment, physical properties, tolerances, Government Specifications and material applications are answered daily without obligation.

Regardless of whether you buy material from one of our four strategically located warehouses, if you are having difficulty working any metal, we want you to telephone, write or wire us.

**Central Steel & Wire Company**

Hot Rolled • Cold Finished  
Carbon & Alloy • Stainless  
Copper • Brass • Aluminum  
Expanded Metal • Structurals

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P. O. Box 5310-A  
REpublic 7-3000

DETROIT 12, MICH.  
13400 Mt. Elliott Ave.  
TWInbrook 2-3200

CINCINNATI 14, OHIO  
Box 148 Annex Sta.  
AVenue 2230

MILWAUKEE 14, WIS.  
6623 W. Mitchell St.  
EVergreen 4-7400



"I wonder what happened to me !" said Alice

**A**LICE in Wonderland ate the magic cake and grew until she was more than nine feet tall. Our National bureaucracy also seems to have partaken of the magic cake of power. Bureaus in our government have grown in number and scope until their activities now control, to a great extent, the lives of all individual Americans. Department after department adds more and more people -- state, justice, commerce, treasury -- not to mention those sprawling emergency born agencies of price control, N.P.A. and other alphabetical subdivisions.

The number of employees of our federal, state and local governments continues to grow. During many recent months, personnel was added

to the federal payroll at the rate of 1,500 daily.

What is the reason for this mushrooming? The Korean War? Threat of war in Europe, Southeast Asia, or the Middle East? Obviously not! A glance at the federal budget gives the answer. The estimated cost of all governmental functions for the fiscal year 1952 is in excess of 70 billions of dollars, an increase of 26 billions, or approximately 60% more than last year.

When will it end? Only you, the individual citizen, who carries the bureaucratic load on his back, can stop it. It will end when enough patriotic men and women demand from congress that the Washington Wonderland start shrinking back to reasonable proportions.



## The Youngstown Sheet and Tube Company

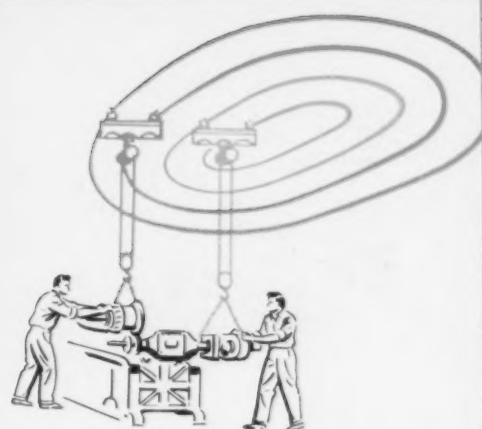
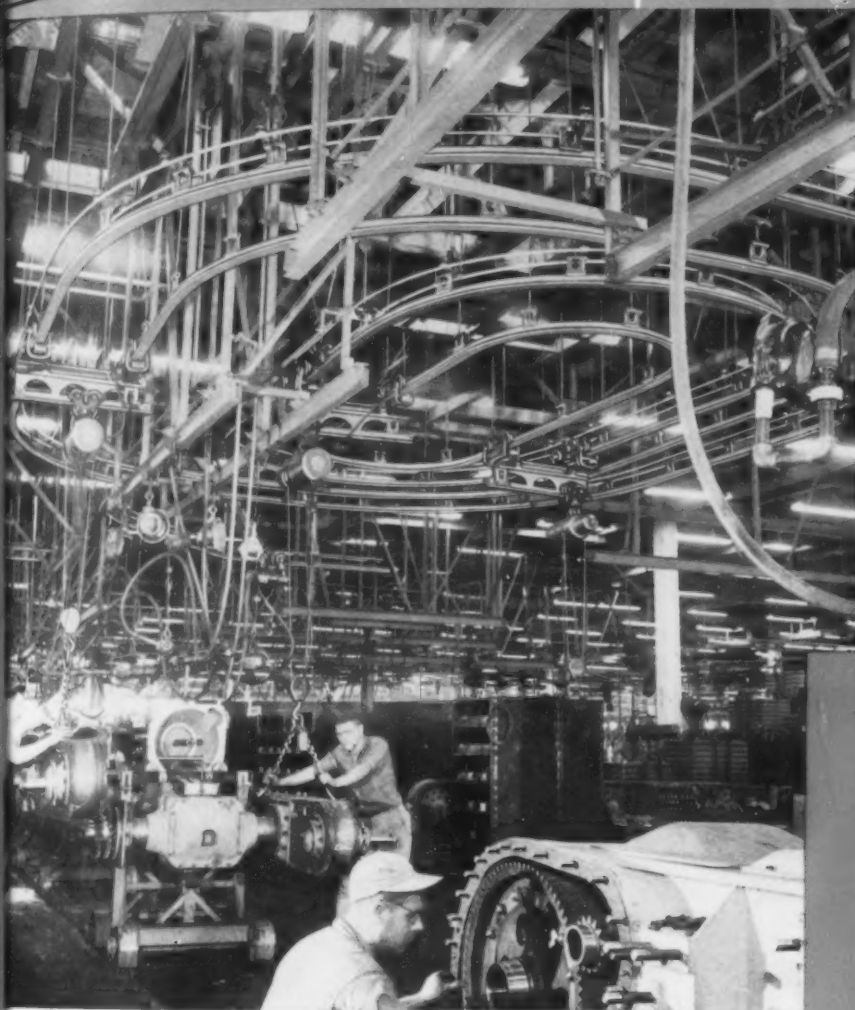
General Offices--Youngstown 1, Ohio

Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now. Turn in your scrap, through your regular sources, at the earliest possible moment.

THE OVERHEAD TRACK TO  
*Lower Production Costs*



Short-span hand-propelled cranes with electric hoists on two oval-shaped runways, handling sub-assemblies of tandem drive housings onto graders on Motor Grader Assembly Line. One oval crane serves left side of assembly line and the other serves right side of assembly line. The cranes bring the parts from a sub-assembly line and support them while being mounted into position.

*Around and Around  
They go...*  
**TO SPEED  
CATERPILLAR'S  
PRODUCTION**

**H**AVE you ever considered oval runways for speeding production? Or have you ever thought of the advantages of a double-girder transfer bridge which permits not only a trolley but a complete bridge to be transferred? Ingenious applications such as these, as well as hundreds of standard transfer bridges, cranes and hoists are cutting costs in the vast 400-acre plant of Caterpillar Tractor Co., Peoria, Illinois. This equipment is the result of concentrated effort on materials handling.

For over 25 years Engineers of Caterpillar Tractor

and Cleveland Tramrail have sought out materials handling inefficiencies and worked together in developing methods of improvement. Such team work, plus specialized materials handling experience and ingenuity, has been an important factor in establishing Caterpillar as one of America's industrial leaders.

Like Caterpillar and thousands of other concerns, large and small, your company most likely can profit handsomely from Cleveland Tramrail's materials handling know-how. Why not investigate what can be done for you?

GET THIS BOOK—Write for a free copy of Book 2008. Packed with valuable information, this well-illustrated book starts you thinking of ways you can step up production and lower costs in your plant.

**CLEVELAND TRAMRAIL DIVISION  
THE CLEVELAND CRANE & ENGINEERING CO.**  
4894 EAST 284th ST. WICKLIFFE, OHIO





CLEVELAND



TRAMRAIL



THE OVERHEAD TRACK TO  
*Lower Production Costs*

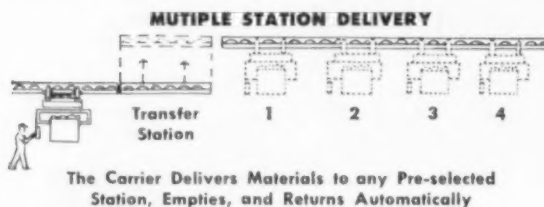
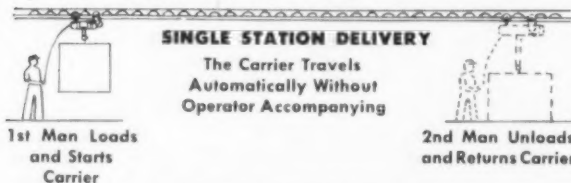
Automatic dis-  
patch system over  
main highway.

Utilizing the roof  
for automatic ma-  
terials handling.

**Delivers Materials**  
*Automatically*

*Across the Street...  
...Over Roof Tops*

Automatic Dispatch Systems enable the delivery of materials to one or several points on the same elevation or other elevations, or between buildings without operator accompanying the carrier. An attendant may or may not be at the receiving end depending upon conditions involved.



**LOAD** a Tramrail van, set the station selector, press a push button and material is on its way. When it reaches its destination, the van stops automatically. After it has been unloaded and reloaded, depressing a button returns it to the starting point or any other station as selected. This is one type of Cleveland Tramrail automatic dispatch system. Other types unload and return automatically or perform other tasks without need of usual accompanying operator.

Automatic dispatch equipment can be operated indoors or outdoors, under ceilings, over roof tops, across streets, between buildings or departments and from one elevation to another. Space otherwise wasted can be utilized for efficient, low-cost materials handling. Widely separated operations can be integrated and carried out as though adjacently located.

Many Cleveland Tramrail automatic dispatch systems are serving the metalworking, rubber, textile, glass, and other industries. Why not learn about this ultra modern way of handling now?



GET THIS BOOK—Write for a free copy of Book 2008. Packed with valuable information, this well-illustrated book starts you thinking of ways you can step up production and lower costs in your plant

**CLEVELAND TRAMRAIL DIVISION**  
**THE CLEVELAND CRANE & ENGINEERING CO**  
4894 EAST 284th ST. WICKLIFFE, OHIO

*Van Huffer  
cold-formed metal shapes  
and tubing are basic  
in better*

# building construction



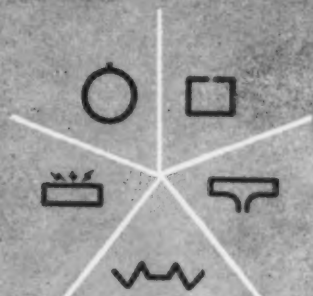
Whether hidden from sight doing a functional job or exposed to view just looking pretty, you'll find Van Huffer serving modern building construction needs in practically every hook and corner.

Architects, designers and engineers, knowing the structural advantages and versatility of Van Huffer metal shapes and tubing applications, are continually thinking up new uses.

Wherever strength without excessive weight . . . beauty without complicated assembly are necessary characteristics, Van Huffer is basic in better building construction.

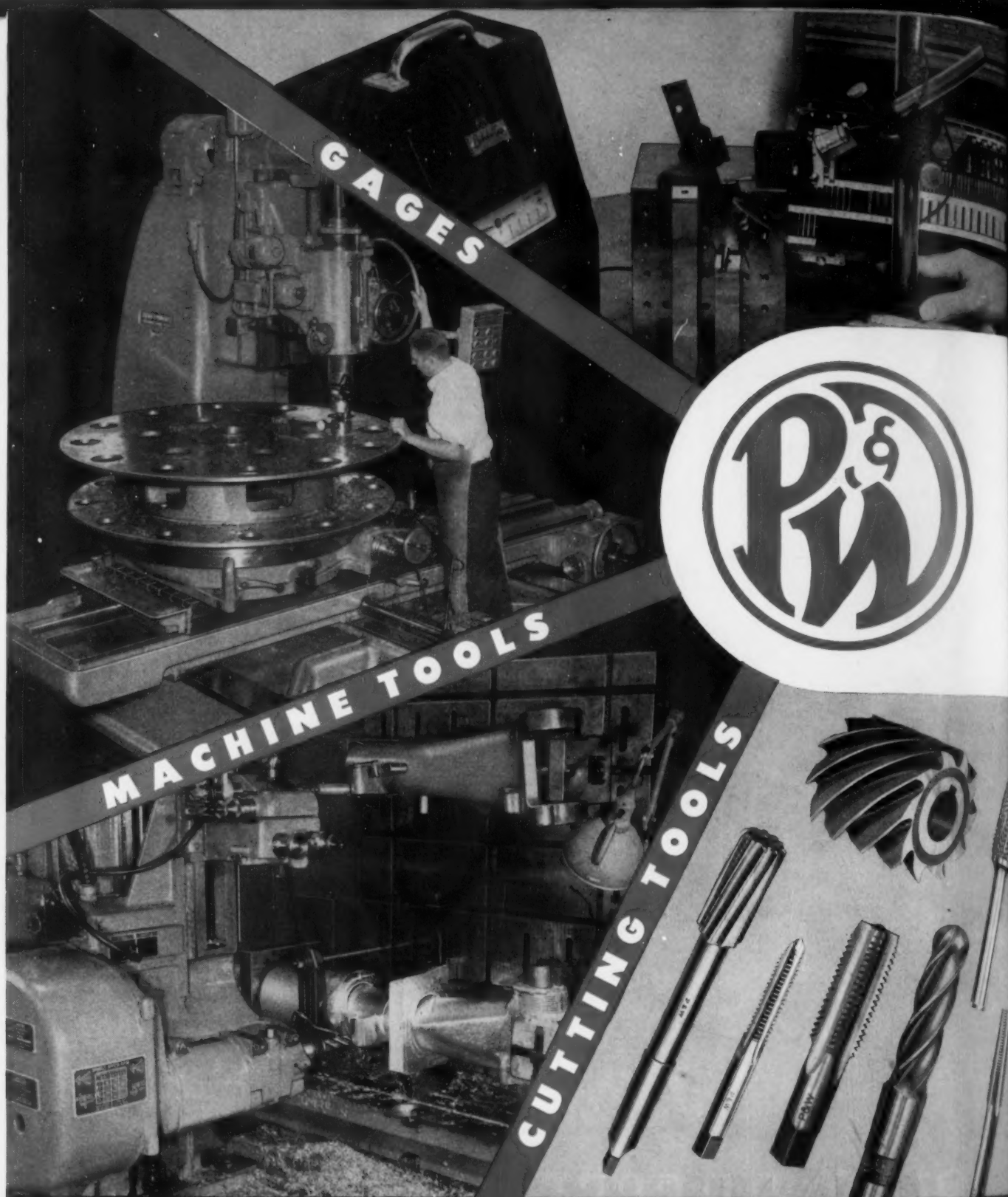
## VAN HUFFER

TUBE CORPORATION • WARREN, OHIO



WELDED, LOCK SEAM, OPEN SEAM, BUTTED TUBING, SHAPES AND MOULDINGS





JIG BORERS • VERTICAL SHAPERS • LATHES • ROTARY TABLES • DIE SINKERS • KELLER MACHINES  
 KELLERFLEX MACHINES AND BURS • DUPLICATING MACHINES • CUTTER AND RADIUS GRINDERS • VERTICAL SURFACE  
 GRINDERS • DIE GRINDERS • GEAR GRINDERS • VERTICAL MILLERS AND PROFILERS • THREAD MILLERS  
 DEEP HOLE DRILLERS AND REAMERS • DIAFORM WHEEL FORMING ATTACHMENTS • TAPS AND DIES • SCREW PLATES  
 MILLING CUTTERS • DIE SINKING CUTTERS • KELLER CUTTERS AND TRACER POINTS • REAMERS • PUNCHES  
 DRILLS AND COUNTERBORES • KNURLS AND CHASERS • THREADING TOOLS AND HOLDERS • PRECISION GAGE BLOCKS  
 STANDARD MEASURING MACHINES • SUPERMICROMETERS • LEAD TESTERS • ELECTROLIMIT AND AIR-O-LIMIT  
 COMPARATORS • UNIVERSAL COMPARATORS • CYLINDRICAL PLUG AND RING GAGES • TRI-ROLL THREAD  
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 GAGES • OIL COUNTRY GAGES • ADJUSTABLE LIMIT SNAP GAGES • RAILROAD GAGES • SYNCHRO-TIMERS  
 CONTINUOUS MILL GAGES • BETA RAY GAGES • MULTIPLE ELECTRIC CONTACT GAGES • SPECIAL CUSTOM-BUILT GAGES

**PRATT & WHITNEY • DIVISION NILES-BEMENT-POND COMPANY**



# PRATT & WHITNEY

FIRST CHOICE FOR

*Accuracy*

Backbone of America's industrial might is her power to mass produce, to create more and better things at lower cost. Modern mass production, involving the highly accurate duplication of components, depends in turn on the basic ability to measure with millionth-of-an-inch accuracy. This ability is, to a great degree, the result of Pratt & Whitney's establishment of the standard inch, accurate to millionths, and the creation of the Standard Measuring Machine nearly 70 years ago.

Today, the highly integrated Pratt & Whitney plant of over 1,060,000 square feet houses a wealth of skill, knowledge and experience. The expert craftsmen and specialists in the several divisions of this unique organization . . . working as a team and with complete interchange of technical knowledge and proficiency . . . design, develop, prove and produce a wide variety of Pratt & Whitney precision Machine Tools, Cutting Tools and Gages . . . the finest ever made to meet the exacting demands of industry.

Extreme accuracy . . . to a degree once believed impossible . . . is today a vital industrial necessity in both small shops and huge production plants. And always, your **First Choice For Accuracy** is Pratt & Whitney.

## PRATT & WHITNEY

DIVISION NILES-BEMENT-POND COMPANY

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*First Choice*

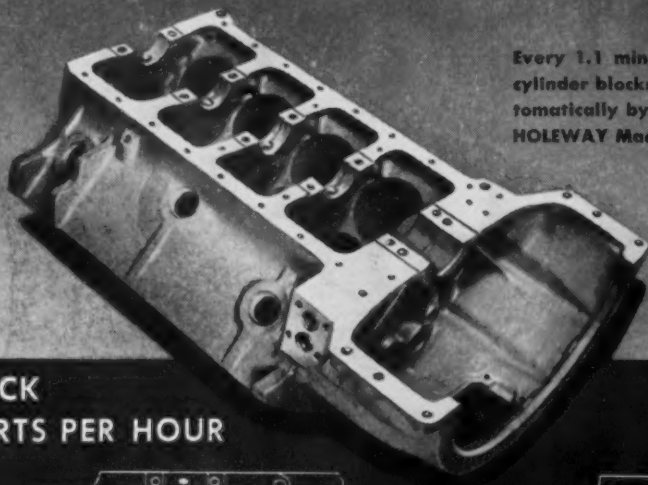
*for Accuracy*

BRANCH OFFICES . . . BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND  
DALLAS (The Stanko Co.) • DETROIT • HOUSTON (The Stanko Co.) • LOS ANGELES • NEW YORK  
PHILADELPHIA • PITTSBURGH • ROCHESTER • SAN FRANCISCO • ST. LOUIS • EXPORT DEPT. WEST HARTFORD

# All 98 Operations

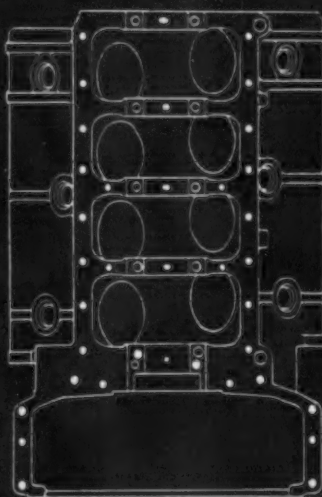
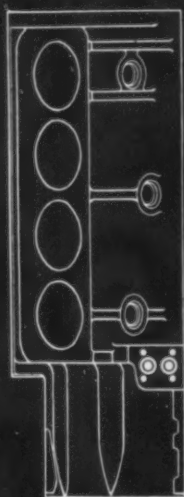
## AND AUTOMATIC INSPECTION TOO!

including milling, trepaning, drilling, counterboring, reaming, chamfering, automatic turning of part 360° with vibrations to remove all chips, and automatic inspection.



Every 1.1 minutes one of these cylinder blocks is completed automatically by the giant NATCO HOLEWAY Machine.

### PART—CYLINDER BLOCK PRODUCTION—50 PARTS PER HOUR



### OPERATIONS

STATION #1 Load 1 part, pan face up  
STATION #2

Left Vertical Head  
Mill filter pad

Right Vertical Head

Drill 16 holes to .257" dia.  
Drill 2 holes to .368" dia.  
Drill 1 hole to 1/2" dia. 3" deep.  
Drill 4 holes to 15/32" dia.  
Counterbore 1 hole to 17/32" dia.  
Drill 4 holes to 1/4" dia. half depth.

STATION #3 Idle

STATION #4

Right Vertical Head

Drill 6 holes to .257" dia.  
Drill 2 holes to 11/32" dia.  
Drill 4 holes to 1/4" dia. to depth.

Left Horizontal Head  
Trepan 2 holes

STATION #5 Idle

STATION #6

Left Horizontal Head  
Drill 2 holes to 5/16" dia.

Drill 1 hole to 1/2" dia.—3" deep.  
Right Vertical Head  
Chamfer 24 holes  
Drill 1 hole to 1/2" dia. to 6" depth.  
Rough ream 1 hole to .437" dia.

STATION #7 Idle

STATION #8

Left Horizontal Head

Drill 2 holes to 5/16" dia.  
Drill 1 hole to 1/2" dia. to 4" deep.

Left Vertical Angular Head

Drill 1 hole to 1/4" dia. half depth.

Right Vertical Angular Head

Drill 1 hole to 1/4" dia. half depth.

STATION #9 Idle

STATION #10

Left Horizontal Head

Drill 1 hole to 1/2" dia. to depth.  
Chamfer 2 holes

Left Vertical Angular Head

Drill 1 hole to 1/4" dia. to depth.

Right Vertical Angular Head

Drill 1 hole to 1/4" dia. to depth.

STATION #11 Idle

STATION #12

Right Vertical Angular Head

Drill 4 holes to 1/4" dia. half depth.

STATION #13 Idle

STATION #14

Right Vertical Angular Head

Drill 4 holes to 1/4" dia. to depth.

Left Horizontal Head

Drill 1 hole to 1/2" dia. to depth.

Chamfer 2 holes

STATION #15

Turn 360° and vibrate to dump chips.

STATION #16

Automatically inspect oil filter pad for broken drills and hole depth. Automatically inspect vertical holes for depth.

STATION #17

Left Horizontal Head

Burr the trepan on 2 holes

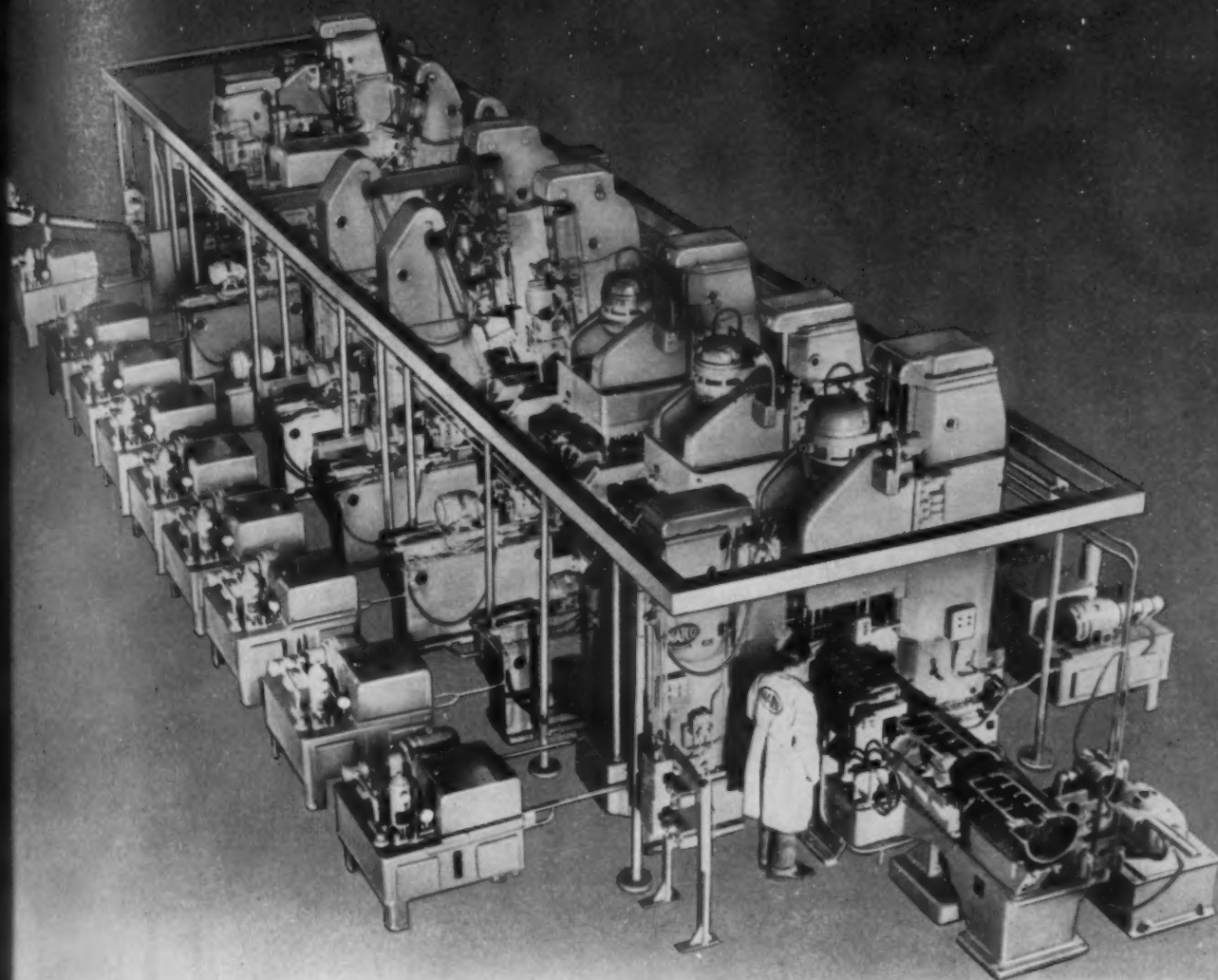
Right Vertical Head

Ream 1 hole to .5626"/.5623" and

.5726"/.5723" diameters

Ream 2 holes to .3677"/.3674" dia.

STATION #18 Unload 1 part.



This single **NATCO** HOLEWAY Automatic Processing Machine completes **ALL 98** pan face operations on this engine block automatically **PLUS** automatic inspection at the rate of 50 parts per hour...nearly one part a minute!



*Call a Natco Field Engineer*

To help you solve your problems in  
Drilling, Tapping, Boring & Facing.



NATIONAL AUTOMATIC TOOL COMPANY, INC., Richmond, Indiana

*Branch Offices*

1809 Engineering Bldg., CHICAGO • 409 New Center Bldg., DETROIT  
1807 Elmwood Ave., BUFFALO • 2902 Commerce Bldg., NEW YORK CITY



No ONE chain serves every purpose

# LINK-BELT offers the right chain

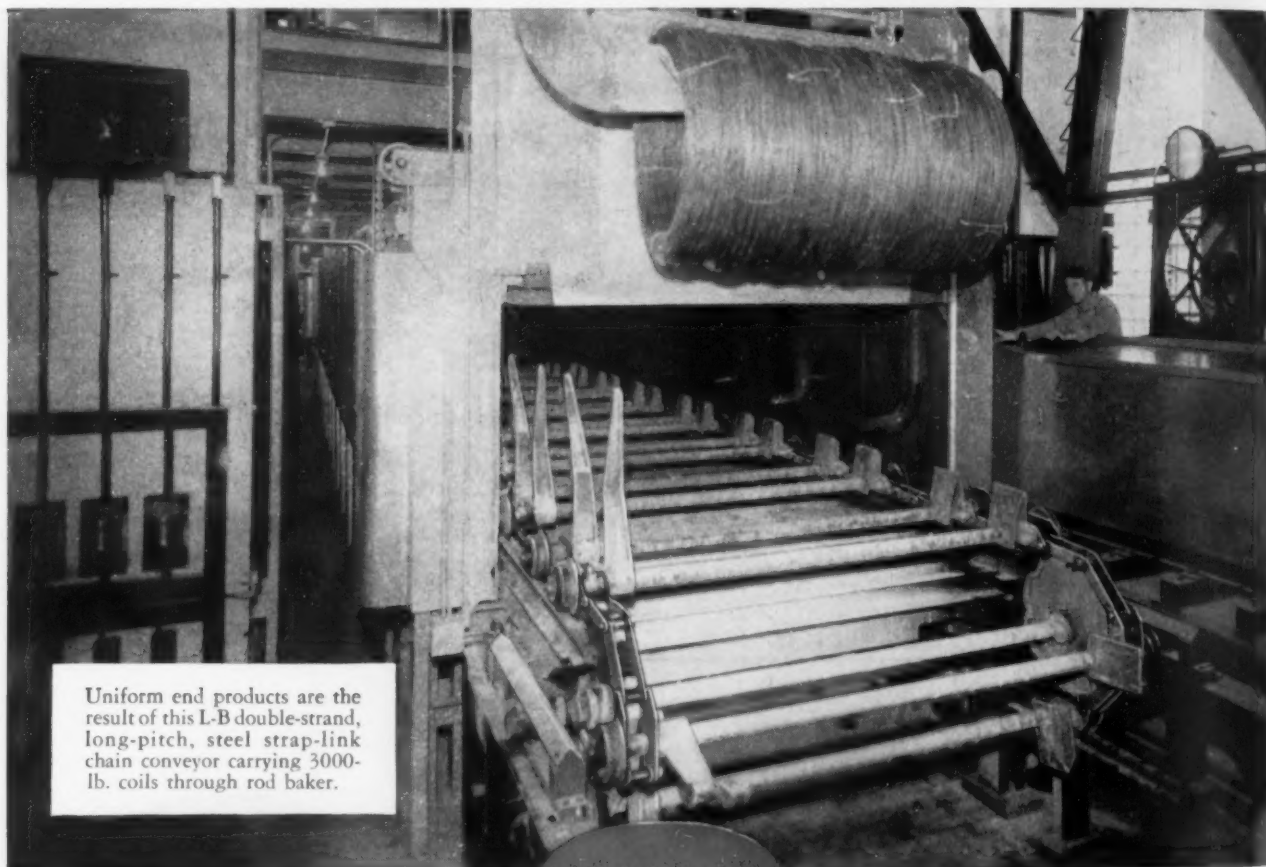
... engineered for  
your requirements

Don't settle for a "cure-all" chain to handle every job. Different types of chain have different characteristics. That's why Link-Belt makes a complete line of chains. Our engineers can recommend the correct type of chain to fit your particular needs . . . the one that does your job best.

Equally important is your assurance that *any* chain with the Link-Belt name will give you longer chain life. Accurate control of raw materials and processes . . . plus manufacturing refinements add up to the highest standards.

**LINK-BELT COMPANY:** Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa), Sydney (Australia). Offices, factory branch stores and distributors in principal cities. 12,721

**LINK-BELT**  
CHAINS AND SPROCKETS



Uniform end products are the result of this L-B double-strand, long-pitch, steel strap-link chain conveyor carrying 3000-lb. coils through rod baker.

Typical chains from  
the complete  
LINK-BELT  
line



Class SS bushed roller chain with straight sidebars—for practically any conveying or elevating service.



Class C combination chain—popular, durable, low cost design for elevators and conveyors.



Class SS bushed roller chain with offset sidebars—for heavy drive service at moderate speeds.



Transfer chain with tilting dogs—for plate and slab travel, loads up to 300,000 pounds.

# Take Your Pick of Performance

In the complete Fairbanks-Morse Pump Line you can pick the pump that best suits your ideas of performance, efficiency, capacity, head, initial and operating costs. Whatever your choice, you can be sure it will more than live up to your expectations . . . it's Fairbanks-Morse.

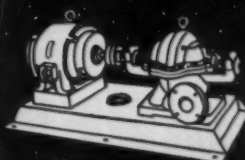
For complete information, call your Fairbanks-Morse pump expert or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.



**FAIRBANKS-MORSE,**

*a name worth remembering*

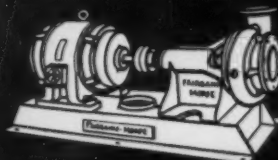
PUMPS • DIESEL LOCOMOTIVES AND ENGINES  
ELECTRICAL MACHINERY • SCALES • HOME WATER SERVICE EQUIPMENT  
RAIL CARS • FARM MACHINERY • MAGNETOS



Two-Stage Centrifugal Pumps  
Capacities: 100-560 G.P.M.



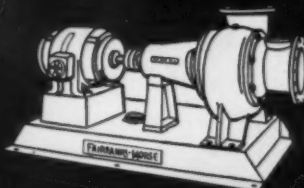
Built-together  
Centrifugal Pumps  
Capacities: 5-1000 G.P.M.



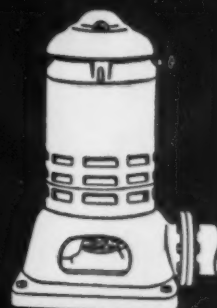
Base-Mounted Centrifugal Pumps  
Capacities: 25-3000 G.P.M.



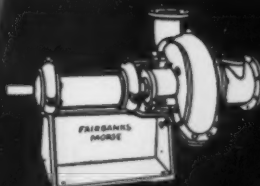
Frame Constructed  
Rotary Pumps  
Capacities: 1.3-450 G.P.M.



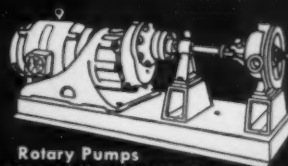
Horizontal Angle Flow Pumps  
Capacities up to 100,000 G.P.M.



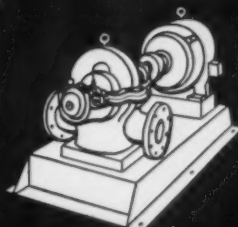
Deep Well Turbine Pumps  
Capacities: 15-25,000 G.P.M.



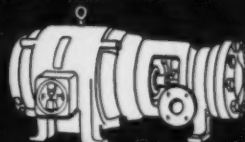
Paper Stock Pumps  
Capacities up to  
2500 G.P.M.



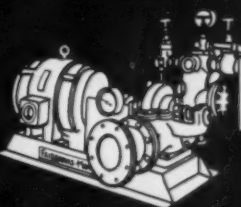
Rotary Pumps  
With Geared Head Motor Drive  
Capacities: 20-450 G.P.M.



Split-Case Centrifugal Pumps  
Capacities: 50-50,000 G.P.M.



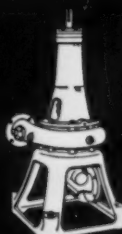
Two-Stage Built-together Pumps  
Capacities: 5-1000 G.P.M.



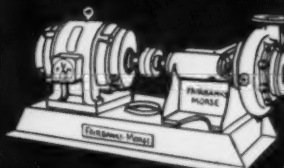
Centrifugal Fire Pumps  
Capacities: 500-2000 G.P.M.



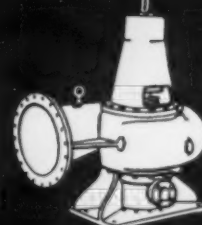
Vertical  
Propeller Pumps  
Capacities:  
1250-216,000  
G.P.M.



Bladeless Impeller  
Food Handling Pumps



Sewage and Trash Pumps  
Capacities: 50-20,000 G.P.M.



Vertical Angle Flow Pumps  
Capacities up to  
100,000 G.P.M.

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# Nothing Like a Slitter

**FOR SPEEDING  
PRODUCTION  
SCHEDULES**

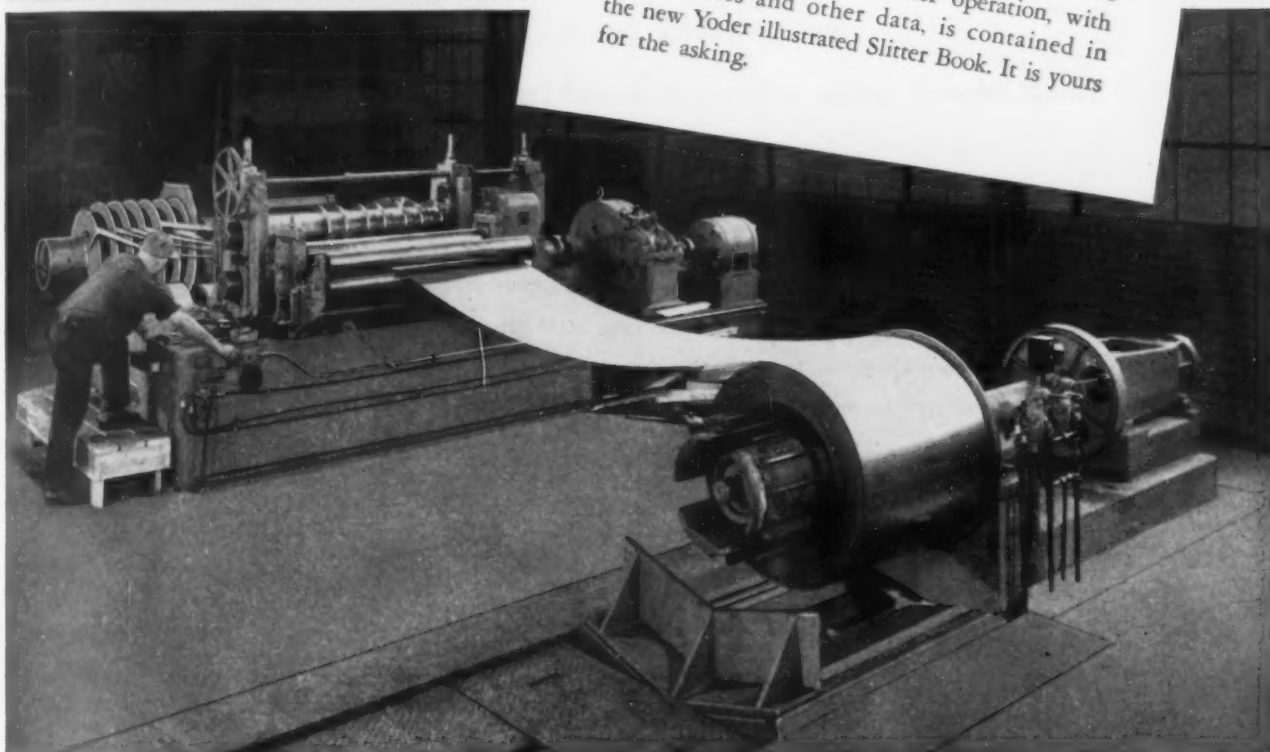
If you have a Yoder slitter you can buy mill-width coils instead of slit strands. Sources of supply of mill-width coils are more numerous, so you can buy wherever you like, at substantially lower prices, and obtain quicker deliveries.

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For requirements as low as 100 tons per month, direct savings alone may be sufficient to repay your investment in a Yoder slitter in the short time of a year.

Information on the respective merits of different types and sizes of slitters and accessories, as well as on the economics of slitter operation, with time studies and other data, is contained in the new Yoder illustrated Slitter Book. It is yours for the asking.



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## Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding



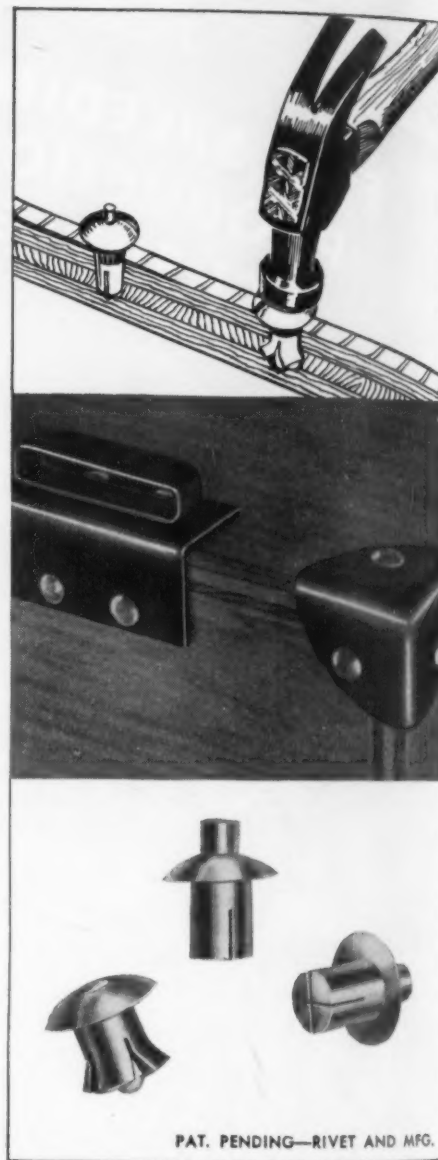
**metal to wood**  
*fast and good!*

**no special tools...  
maximum grip without bucking**

Placed in blind hole, Southco Drive Rivets are driven like nails. You get a metal-to-wood fastening that grips securely, resists vibration, does not project through to deface the reverse side. Use the same standard rivet as for metal-to-metal applications . . . get the same strength, the same speed, same one man operation, same time and money savings. No "special," costly fastenings, no special tools, no bucking-up, trimming, grinding or finishing.

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March 27, 1952



only at **DRAVO** can you get . . .

a **COMPLETE LINE** of

**CRANE CAB COOLERS AND CONDITIONERS**

No matter what radical temperature variations or atmospheric conditions occur in your industry, there's a Dravo Crane Cab Cooler or Conditioner available to protect your crane cab operator, safeguard his health, increase his efficiency and alertness and improve safety and production records in your operations.

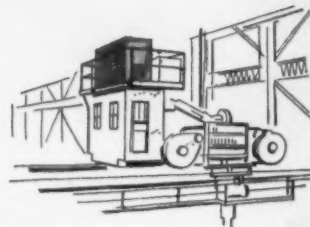
Dravo Crane Cab Coolers and Conditioners provide complete air conditioning, filter the air, remove dusts, dirt and fumes; heat the cab in winter, cool it in summer and provide constant ventilation the year around.

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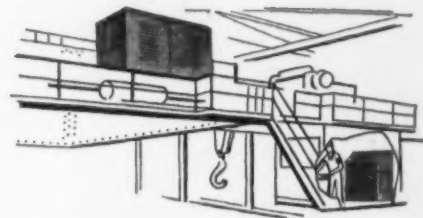
*Dravo is your one source of supply for all crane cab coolers and conditioners. Units are quickly and easily installed with a minimum of downtime required. Parts are interchangeable on all units.*

### **Available for Immediate Delivery**

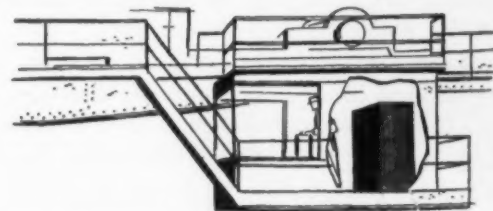
No delays in getting the units you want. For more information write for a complete catalog—or phone your nearest Dravo sales office and have our representative call on you.



**SELF-CONTAINED COOLERS**—mounted alongside the cab or on the cab roof. Only electrical leads and connections required. Thermostat control—fully automatic—maintains 85° F. temperature with ambient temperatures up to 175° F. Ideal for "hot spots" in steel and other metal-working industries.



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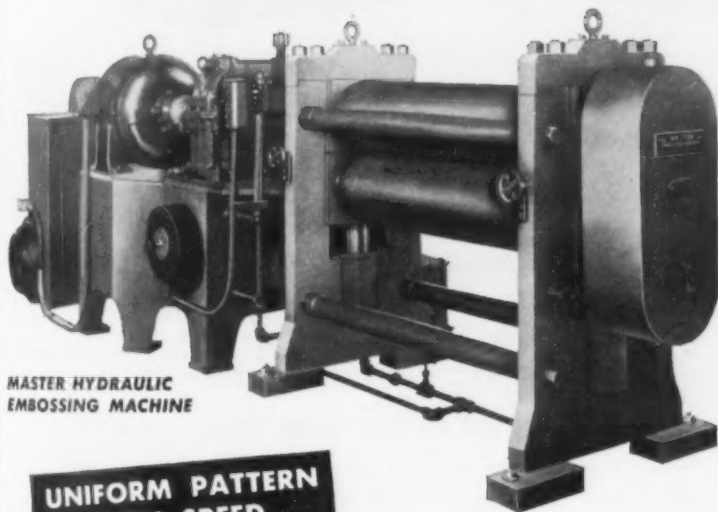
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With the **GREATEST** Development in History  
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MASTER HYDRAULIC  
EMBOSSING MACHINE

**UNIFORM PATTERN  
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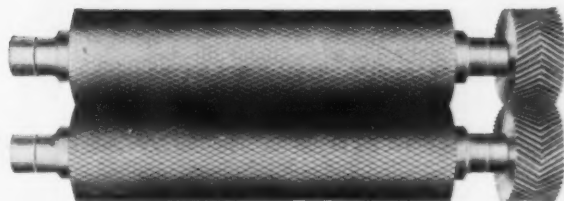
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## MASTER *Hydraulic* EMBOSSING MACHINE

with  
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ENGRAVED MATCHED HARDENED  
FORGED STEEL ROLLS

U. S. Patent Pending

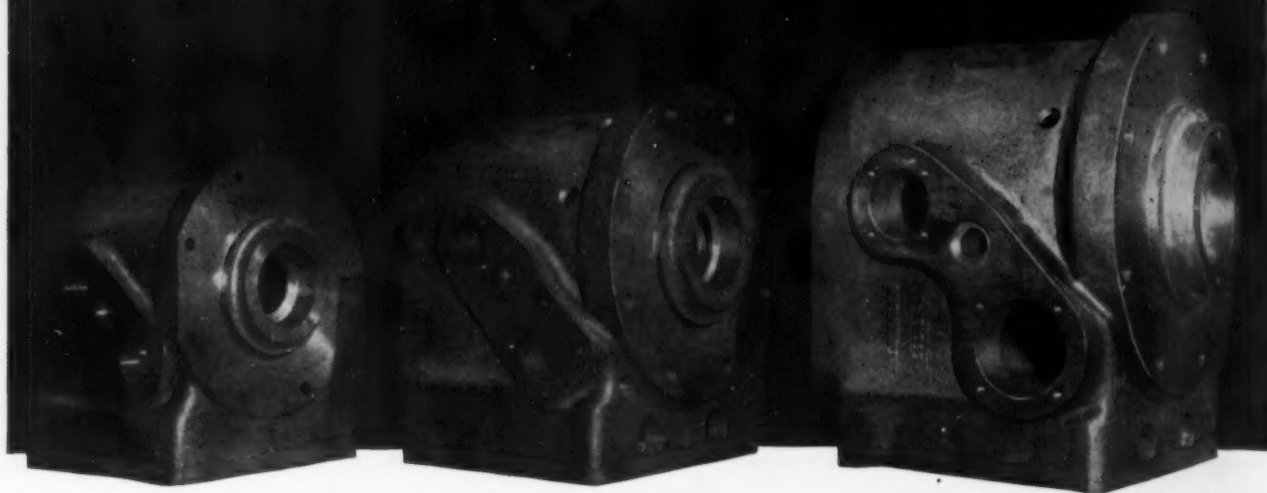
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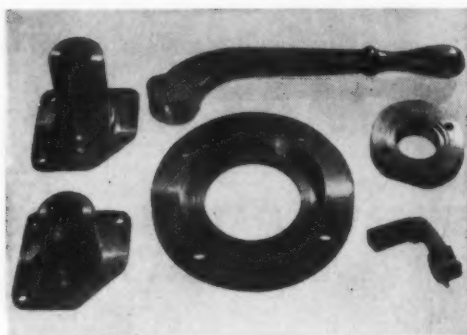
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March 27, 1952

**"fully satisfies loading conditions..."**



**So again the choice is: GRAY IRON**



Specify gray iron for smaller operating parts, too, like these components of the torque control pictured above.

**MAKE IT BETTER WITH GRAY IRON**

Second largest industry in the  
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**BECAUSE GRAY IRON DOES THE JOB AT LOWER COST**, the designer specified gray iron castings for this torque control housing. He knows you can't beat gray iron for ready machinability at a specified pressure strength level.

**GRAY IRON GIVES YOU ALL THESE ADDED PRODUCTION ADVANTAGES:** Castability, rigidity, low notch sensitivity, wear, heat- and corrosion resistance, durability, vibration absorption, wide strength range.

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**SCRAP IS NEEDED FOR DEFENSE—KEEP IT MOVING!**

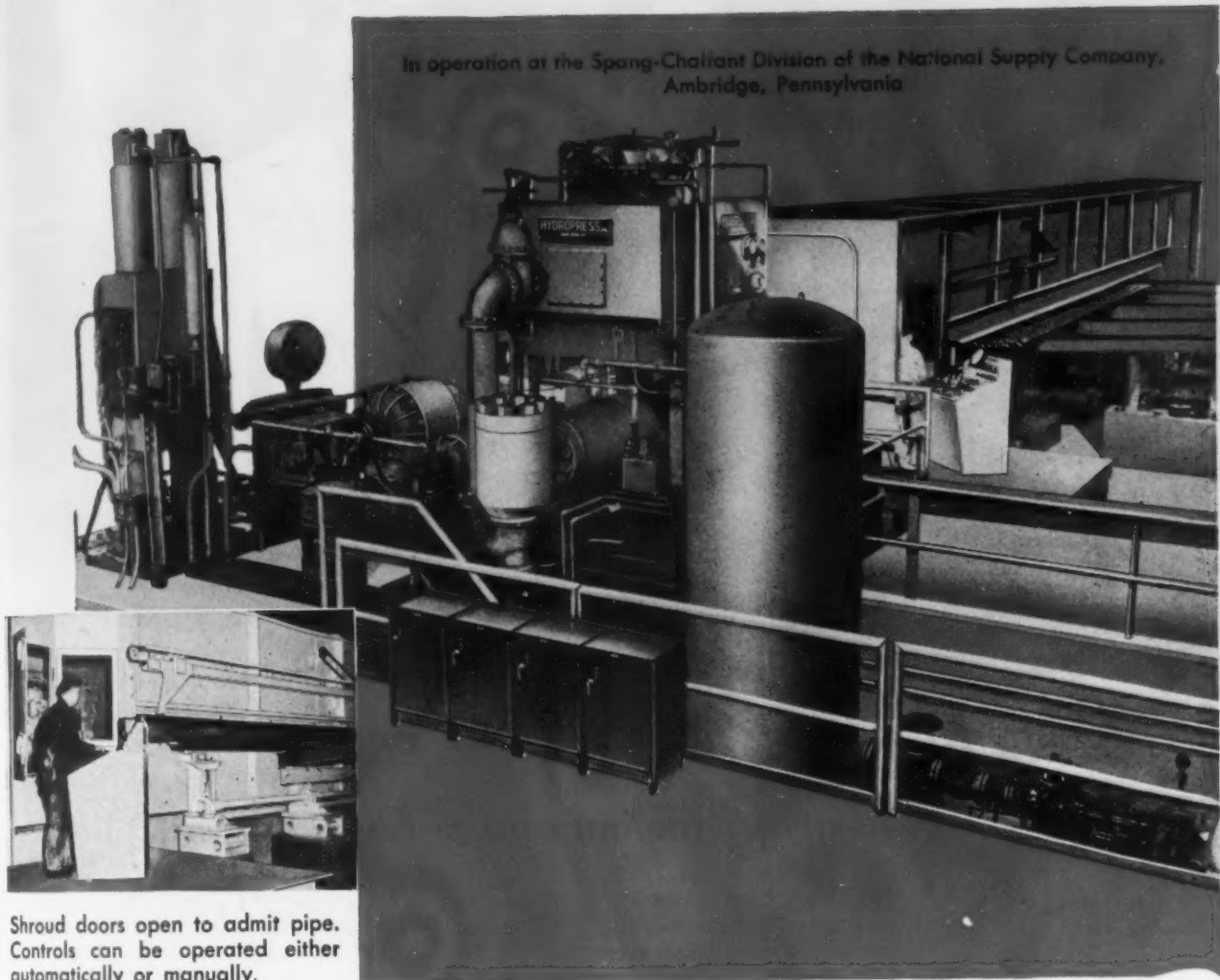
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March 27, 1952

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He brings you practical, *proven* methods that add speed and sureness to the hands of toolmakers and heat treaters. He makes available new ideas to add hours of service life to tools and dies, reduce machine downtime and squeeze *more* from existing plant facilities. He is your Carpenter representative, bringing you Carpenter's personalized service program . . . at no extra cost.

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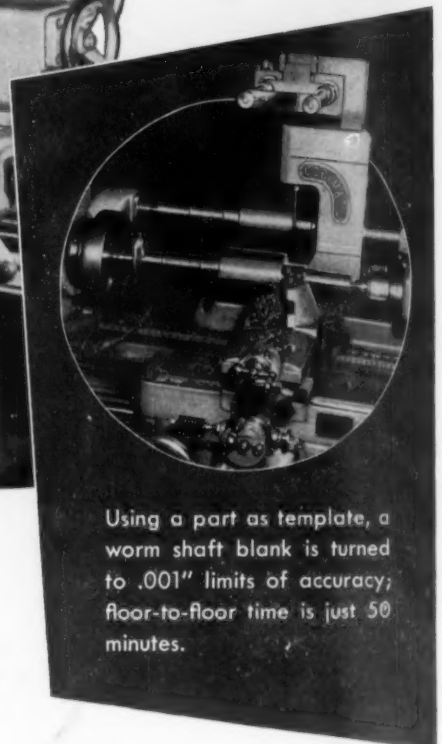
on **28** different  
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**... at Bay City Shovels Inc., Bay City, Michigan**

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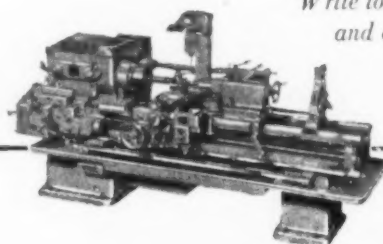
Using a part as template, a worm shaft blank is turned to .001" limits of accuracy; floor-to-floor time is just 50 minutes.

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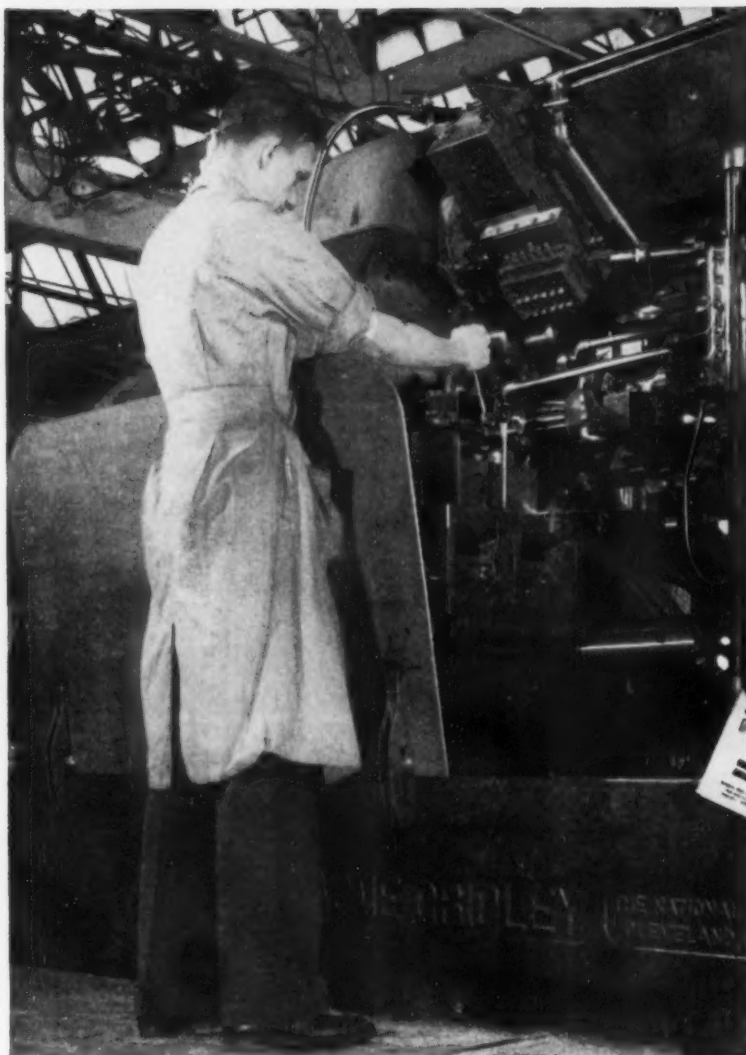
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March 27, 1952

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SOURCES  
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March 27, 1952

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OUR NEW specialty spring steel plant is in full swing. Equipped with today's most modern, precision machines, we believe we're producing flat spring steel that gives more for your money than ever before.

This new spring steel is tops in uniformity. It saves you preparation time . . . cuts down machine

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AT 158 TO 284  
DEG. F.



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POWER BUY**



**AT ANY PRICE**

Remove scale quickly . . .  
without loss of base metal

## DU PONT SODIUM HYDRIDE DESCALING PROCESS

**SCALE** can be quickly, thoroughly and economically removed from a wide variety of metals with the Du Pont Sodium Hydride Descaling Process. Equipment can be manually operated, conveyORIZED or continuous and is economical to install and operate. Treatments can be carried out on finished articles or processed stock of all sizes and shapes . . . *leaves parts clean, bright and uniformly free of scale and smut.*

### LOOK AT THESE ADVANTAGES OF THE SODIUM HYDRIDE PROCESS

- **UNIFORM DESCALING**—On all surfaces without need for special racking procedures.
- **HIGH-SPEED OPERATION**—Descales in shortest practicable time cycle.
- **NO LOSS OF BASE METAL**—Bath action is reducing. Reaction stops when oxygen is removed from scale . . . eliminates pickling losses, etching and pitting.
- **ECONOMICAL TO OPERATE**—Permits savings in acid and metal . . . handles large volume of work in small space . . . is non-electrolytic.
- **HANDLES DIFFERENT METALS**—Alloy steel, stainless steel, nickel, copper, titanium and cobalt bearing alloys can be efficiently descaled—even in the same bath.
- **USES LOW-COST EQUIPMENT** (Carbon Steel Tanks). No hydrogen embrittlement.

**FOR MORE INFORMATION** about the Du Pont Sodium Hydride Descaling Process, just get in touch with our nearest district or sales office or send the coupon below to: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

### DISTRICT AND SALES OFFICES

BALTIMORE	DETROIT
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CHICAGO	NEW YORK
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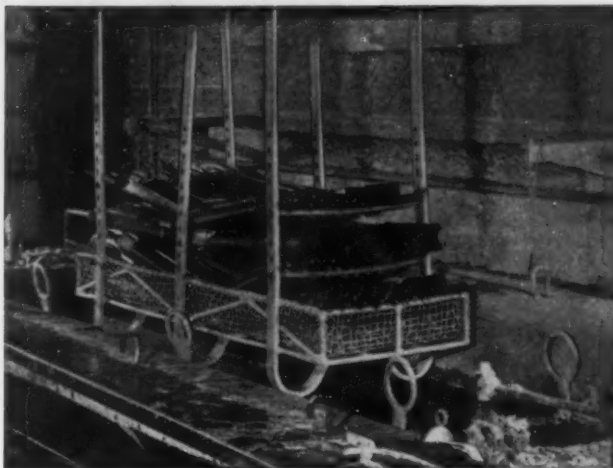
\*Barada & Page, Inc.

**DU PONT**  
**Sodium hydride process**  
**for positive descaling**

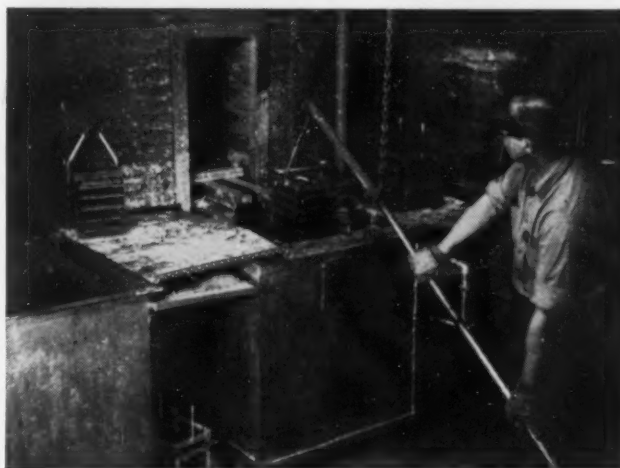


**150th Anniversary**

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



**ROUGH FORGINGS** . . . Scale is quickly and uniformly removed from stainless steel turbine blades between forging operations. Hydride process permits high-speed descaling at low cost . . . can handle many types of metal in a wide range of sizes and shapes.



**FINE MACHINED PARTS** . . . High-speed steel thread chasers are thoroughly descaled prior to final inspection. Hydride descaling does not attack base metal . . . permits close dimensional accuracy of parts to be maintained—even in fine, recessed areas.

E. I. du Pont de Nemours & Co. (Inc.)  
Electrochemicals Department  
Wilmington 98, Delaware

Please send me detailed information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning \_\_\_\_\_ products.

Name \_\_\_\_\_ Position \_\_\_\_\_

Firm \_\_\_\_\_

Street and No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**NOW**

**Inconel has a new companion alloy**

**MEET**

**INCOLOY**

(32 NICKEL—21 CHROMIUM)

**. . . another addition to the Inco High-Temperature alloy family**

You are probably familiar with the high temperature strength properties of Inconel®—its resistance to oxidation and corrosion—its acceptance by industry as a high-temperature alloy.

But now NPA has restricted Inconel for certain heat-resisting applications (Schedule C to NPA Order M-80). And you may be wondering what metal you can now use to solve your high-temperature operating problems.

*Have you heard about Incoloy?*

It is permissible for most high-temperature applications. And it may be the answer for you.

Incoloy® is not a substitute for Inconel. It's a specially developed companion alloy with a composition of 32 Nickel — 21 Chromium. It provides a useful degree of strength at high temperatures and good resistance to oxida-

tion. And it has good workability and welding properties.

Incoloy is the latest development of Inco's Engineers in their continuous search for better high-temperature materials. Like the other INCO Nickel Alloys it is on extended delivery because of defense demands. So anticipate your needs well in advance — and when ordering, be sure to give NPA ratings and complete end use information.

For more information on this newest high-temperature alloy write for our "Preliminary Report on Incoloy." And if you have a special problem on which you would like the assistance of our High-Temperature Engineers, ask us to send you a High-Temperature Work Sheet.

**THE INTERNATIONAL NICKEL COMPANY, INC.**  
67 Wall Street, New York 5, N. Y.


**NICKEL  ALLOYS**

**MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL • "S"® MONEL  
NICKEL • LOW CARBON NICKEL • DURANICKEL®  
INCONEL® • INCONEL "X"® • INCOLOY® • NIMONICS**



for ease of operation...  
economical production

use **Pittsburgh**  
**COLD HEADING WIRE**



You get trouble-free service from your cold heading machines—more economical production with Pittsburgh Wire. It feeds smoothly into your dies because of its uniform size. It forms readily in upsetting, extruding, thread rolling, bending and flattening operations because it has the ductility and the correct lubricant you need for high quality production in your particular operation.

The precision control of quality at Pittsburgh Steel gives you sound wire, with the toughness you want in your finished product. The economy of Pittsburgh Wire will be reflected in both your production records and the quality of the items you produce. Specify Pittsburgh Steel Wire for all your cold heading and cold forming operations. For information write Pittsburgh Steel Company, Dept. 1A, Grant Bldg., Pittsburgh 30, Pa.



**Pittsburgh Wire**

A product of **PITTSBURGH STEEL COMPANY**

**Which brick should I use for better furnace walls?**

**J-M Insulating Fire Brick ...they're light-weight and quick-heating, too!**

## 6 types . . . for savings in services up to 3000F

Because of their quick-heating and low-heat transfer characteristics, Johns-Manville Insulating Fire Brick are efficient fuel-savers for use at operating temperatures up to a full 3000F on the insulation.

Each type of J-M Insulating Fire Brick has the correct balance of thermal and physical properties that assures maximum economies within a specific temperature range. All types are *quick-heating* . . .

operating temperatures are reached in a short time, thereby saving fuel.

Identical materials can also be obtained in large size units known as Johns-Manville Insulating Fireblok. Fireblok have the same properties as the brick, but are made in extra large sizes for added construction economies. The large units can be installed faster . . . require fewer joints and less bonding mortar. During rebuilding or re-

pair, furnace down-time is appreciably shortened with Fireblok construction.

A Johns-Manville insulation expert will gladly explain the advantages and economies of using J-M Insulating Fire Brick and Fireblok for refractory linings or as back-up insulation behind other refractory protection. Write to Johns-Manville, Box 290, New York 16, N. Y. In Canada, write 199 Bay St., Toronto 1, Ontario.

Properties	Types of Insulating Fire Brick and Fireblok					
	JM-3000	JM-28	JM-26	JM-23	JM-20	JM-1620
Temperature limit	†3000F	†2800F	†2600F	†2300F	†2000F	‡2000F †1600F
Density, lb per cu ft	63-67	58	48	42	35	29
Transverse strength, psi	200	120	125	120	80	60
Cold crushing strength, psi	40	150	190	170	115	70
Linear shrinkage, percent	*0.8 at 3000F	4.0 at 2800F	1.0 at 2600F	0.3 at 2300F	0.0 at 2000F	0.0 at 2000F
Reversible thermal expansion, percent	0.5-0.6 at 2000F	0.5-0.6 at 2000F	0.5-0.6 at 2000F	0.5-0.6 at 2000F	0.5-0.6 at 2000F	0.5-0.6 at 2000F
Conductivity (Btu in. per sq ft per F per hr at following mean temperatures)						
500F	3.10	2.00	1.92	1.51	0.97	0.77
1000F	3.20	2.50	2.22	1.91	1.22	1.02
1500F	3.35	3.00	2.52	2.31	1.47	1.27
2000F	3.60	3.50	2.82	2.70	1.72	...

\*24-hr Simulative Service Panel Test; all others 24-hr soaking period.

†Back-up or exposed.

‡Back-up only.



**Johns-Manville**

*first in*

**INSULATIONS**



## Let's take a closer look at your **MACHINING** **REQUIREMENTS**

Since machining is probably the most widely used method of producing hollow parts from steel tubing, keeping well-informed calls for periodic review of the characteristics of tube machining operations and new developments in this field. A new slant on types of tubing, grades of steel, mechanical properties and dimensional tolerances could show you the way to reduce overall time and costs.

Because B&W's long experience has *proved* the value of never-ending investigation to find *new uses for tubing's adaptability*, B&W keeps reminding people who work with metal that tubing is more than bar stock with a hole in it; it is a semi-finished product. If there's a machining question on your mind these days, why not drop us a line? Tell us end-use of the mechanical tubing, OD, ID, and length of finished part, method of chucking and sequence of machining operations—description of finished

product, dimensional accuracy and type of surface finish required. Send along a print if you like.

The B&W Technical Staff will supply objective recommendations and, if you desire, your regional B&W Tube Representative—Mr. Tubes—will step in to help interpret your needs to the home office. Bulletin TB-324 gives an idea of what can be done with fine tubing. Write for it.

### THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

#### General Offices & Plants

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing  
Alliance, Ohio—Welded Carbon Steel Tubing

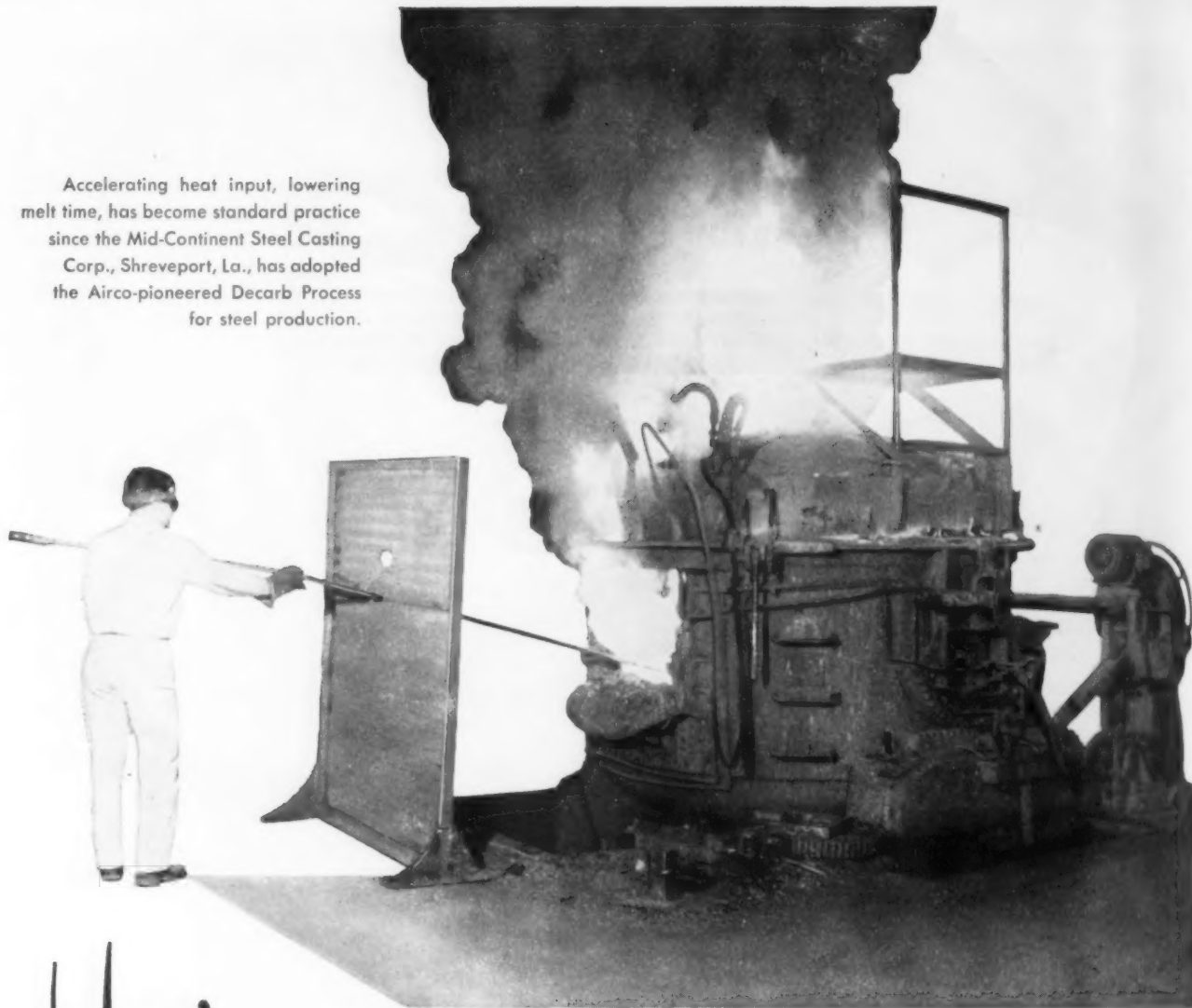
Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio  
Denver 1, Colo. • Detroit 26, Mich. • Houston 2, Texas • Los Angeles 17, Cal. • New  
York 16, N. Y. • Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Cal. • Syracuse 2, N. Y.  
Toronto, Ontario • Tulsa 3, Okla.



TA-1680M



Accelerating heat input, lowering melt time, has become standard practice since the Mid-Continent Steel Casting Corp., Shreveport, La., has adopted the Airco-pioneered Decarb Process for steel production.



# How TO INCREASE STEEL PRODUCTION

use less power—save more time

## WITH AIRCO'S STEEL DECARBURIZATION PROCESS

Oxygen injected under the slag cover at 80 psi has become the answer to Mid-Continent's faster steel production.

Increased bath temperature—faster carbon elimination—lower power consumption . . . time saved per heat . . . gives Mid-Continent a product with the same normal chemistry, slag control and fluidity as they formerly received using ore. Additional work-flow advantages are gained by the elimination of

ore handling and storage problems.

Oxygen decarburization for faster heats may be put to work for you. The facilities of our Technical Sales Division may furnish you with the answers you need to know about this process for your use. If you are interested in obtaining further information, please address:

AT THE FRONTIERS OF PROGRESS YOU'LL FIND



DEALERS  
AND OFFICES IN  
PRINCIPAL CITIES

# AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY • AIR REDUCTION PACIFIC COMPANY

REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED



The men who handle the "mikes" and other more precise measuring instruments in our plants all have one very important idea in common: to hold strong and steady a standard of craftsmanship which has stood for a great many years.

To help them, they have every needed item of modern production and control equipment, of course. But the very root and essence of high quality in a product is still the desire of a *man* to make it that way—and that's your main reason for the long-standing reliability of Columbia and Summerill products.

W&D 3936

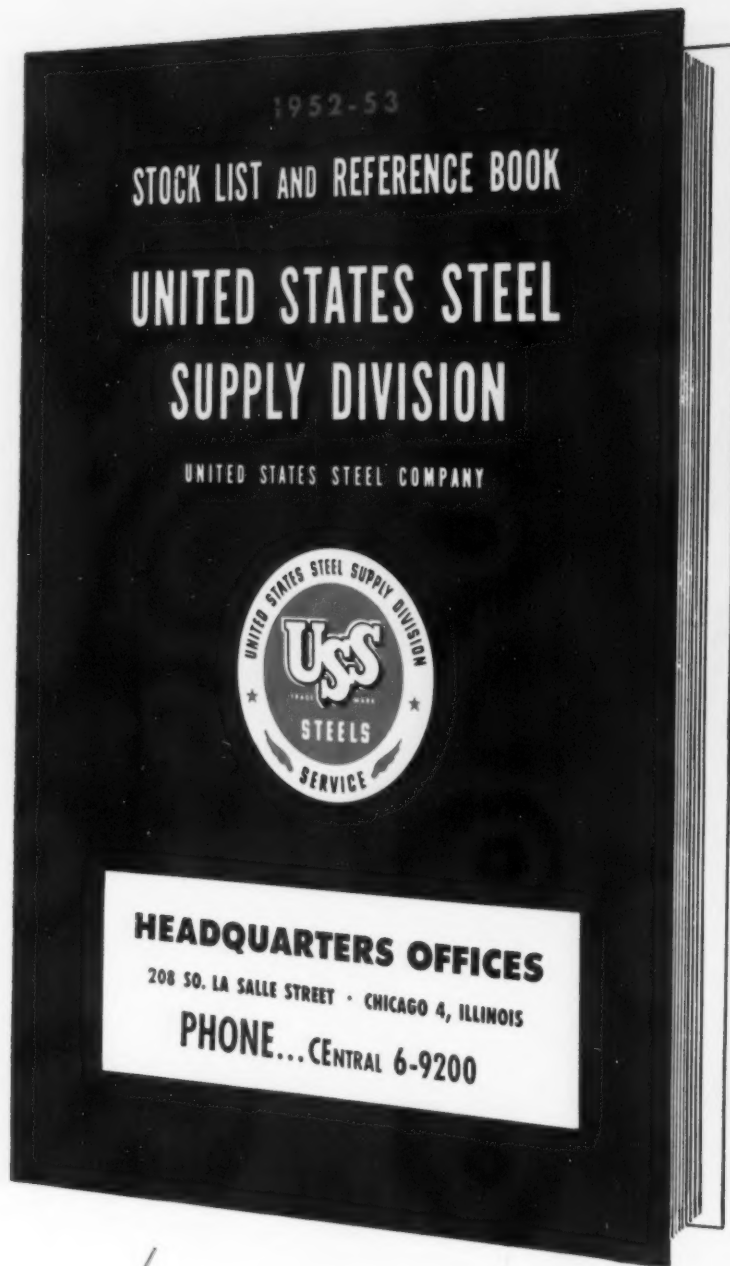


**Columbia** STEEL & SHAFTING COMPANY

SUMMERILL TUBING COMPANY DIVISION

PITTSBURGH 30, PENNSYLVANIA

*SPECIALIZING IN COLD FINISHED STEEL BARS and SEAMLESS STEEL TUBING*



# FOR QUICK, ACCURATE STEEL SELECTION

**SEND NOW FOR  
YOUR NEW 1952-53  
STOCK LIST AND  
REFERENCE BOOK**

- This easy-to-use, illustrated steel guide is packed with useful information and features:
- A list of steel, tool and machinery stocks with specifications and technical data on all steels including alternate and tentative standard steels.
- Descriptions of applications of Alloy, Stainless and Carbon Steels plus a tubular product chart showing all types with characteristics and applications of each.
- Comprehensive reference charts and tables as well as 16 tabs for quick product reference and color sections for special products.

**MAIL COUPON TODAY FOR YOUR  
FREE COPY.**

Fill in and mail the attached coupon and your  
1952-53 Stock List will be delivered shortly.

## UNITED STATES STEEL SUPPLY DIVISION

UNITED STATES STEEL COMPANY

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WAREHOUSES COAST-TO-COAST: BALTIMORE • BOSTON • CHICAGO • CLEVELAND • LOS ANGELES

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United States Steel Supply  
208 S. La Salle Street, Chicago 4, Illinois

Gentlemen: Please send me, without obligation, a copy of  
your 1952-53 Stock List.

Name .....

Title .....

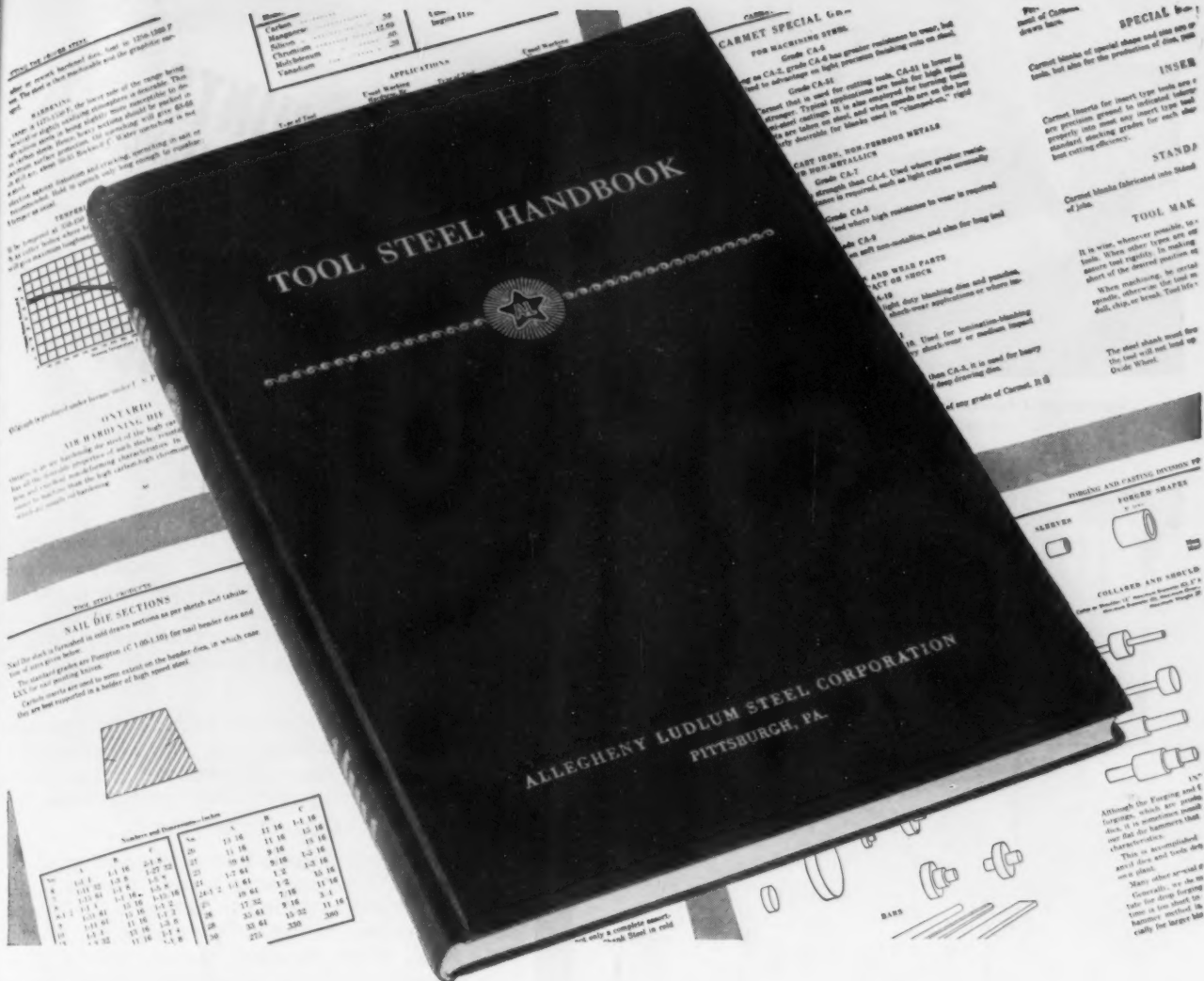
Firm .....

Street .....

City ..... State .....

**UNITED STATES STEEL**





# AVAILABLE NOW—196 pages of Valuable Tool Steel Information

A new Tool Steel Handbook—one of the most comprehensive treatises of its kind ever offered by a tool steel producer—has just been published by Allegheny Ludlum. In addition to a relatively complete picture of Allegheny Ludlum Tool Steels, their properties, applications and the forms in which they are available, this 196-page case-bound book presents an extensive discussion of heat treating and handling techniques

as well as a complete set of weight tables and other useful reference material.

Your copy of the Tool Steel Handbook will be sent—*without charge*—upon request. Our only stipulation: please make your request upon your company letterhead. • Write Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.

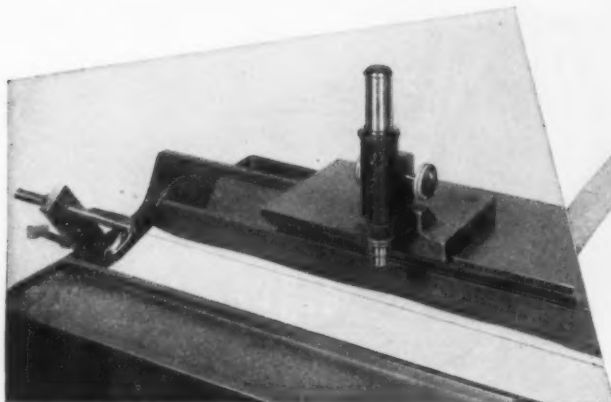
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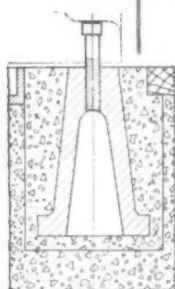
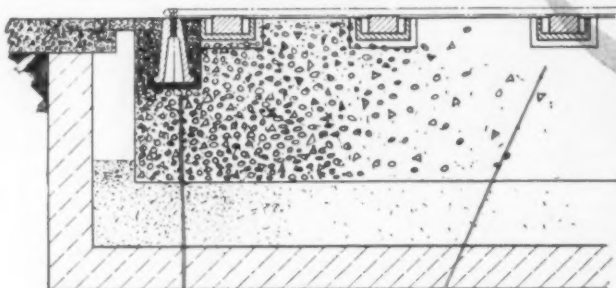
*Remember this also*  
America must have more  
Scrap to make more Steel!  
**Get in the Scrap Now!**

For complete **MODERN** Tooling, call  
**Allegheny Ludlum**

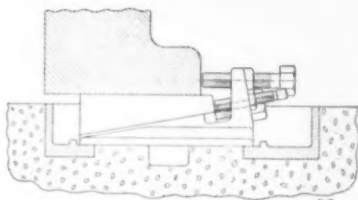




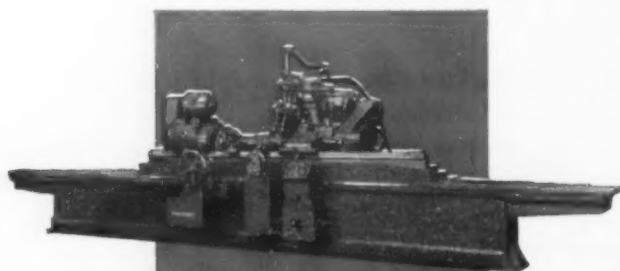
Microscope Aligning Instrument for checking accuracy of table way alignment.



Anchor bolt in foundation prepared especially for the machine.



Leveling blocks should be imbedded in the concrete foundation before the machine arrives.



CINCINNATI FILMATIC 16" x 96" Roll Grinding Machine. Catalog No. G-600 contains complete specifications for the 16" Heavy Duty and 30" and 24" Plain and Roll Grinding Machines. Catalog No. G-387 covers the 20", 24" and 28" Heavy Duty Machines. Write for copies of these catalogs.



## HELPFUL HINTS FOR TOPNOTCH PERFORMANCE FROM YOUR LARGE CINCINNATI FILMATIC CENTERTYPE GRINDERS

You probably know that large centertype grinding machines are in critically short supply, so it will pay well to do whatever you can to keep yours running. Here are a few suggestions for the larger CINCINNATI FILMATIC Centertype Grinders—the 14" to 28" sizes.

### FOUNDATION

Adequate foundations for long precision grinding machines are very necessary. Follow the recommendations outlined in foundation plans supplied with the machines.

### LEVELING AND ALIGNMENT

Improperly leveled and aligned machines can be the source of many troubles. Wedge blocks are supplied to facilitate the leveling operation. Periodically recheck accuracy of level. When installing the machine, accurate alignment can be accomplished with the aid of a Microscope Aligning Instrument.

### LUBRICATION

of your CINCINNATI FILMATIC Plain and Roll Grinding Machines is simple and easy; do not neglect it. As a reminder, make a lubrication chart and attach it to your machine.

### OIL FILTERS

There are three oil filters—one for the FILMATIC spindle bearing lubricating system, and one each for the table way and wheelhead way oil. All are the replaceable type. Change them periodically; once a year should be sufficient.

If you will take these simple preventive measures, you will be well repaid in accurate, dependable performance for many years... performance that will match the lifetime dependability of FILMATIC spindle bearings.

CINCINNATI GRINDERS INCORPORATED  
CINCINNATI 9, OHIO

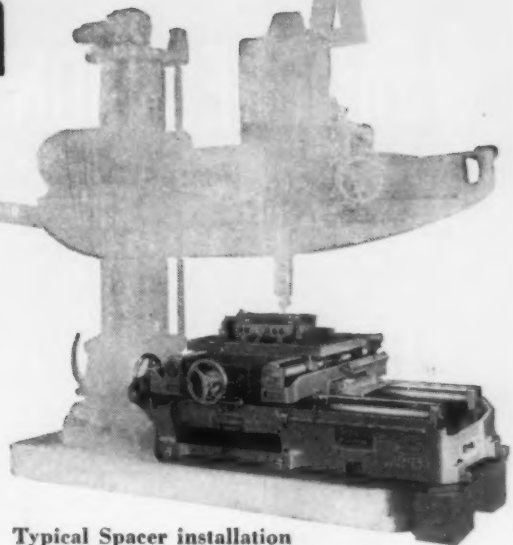
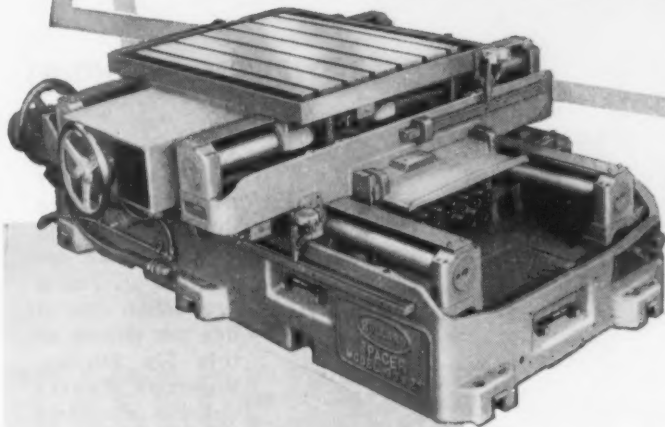
# CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES  
CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES

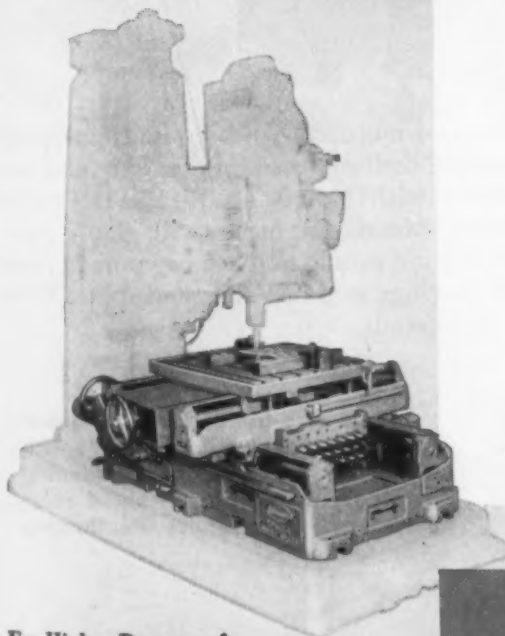
# EVOLUTION..... FIRST JIGS

*then*

## BULLARD SPACER



Typical Spacer installation  
on Radial Drill



For Higher Degrees of  
Accuracy, the Spacer is installed on  
Cincinnati Super Service fixed arm Drill

Jigs and templates are the old original means of repetitive production of a pattern of accurately spaced holes.

Today, through Evolution and Engineering Skill, Bullard has developed a **FASTER**, more Accurate and **LESS COSTLY** Method for this type of work.

Interchangeability of parts in small quantities at minimum cost is most important in modern manufacturing.

**NO TIME REQUIRED FOR: —**

Jig Design                      Jig Handling

Jig Processing                Jig Storing

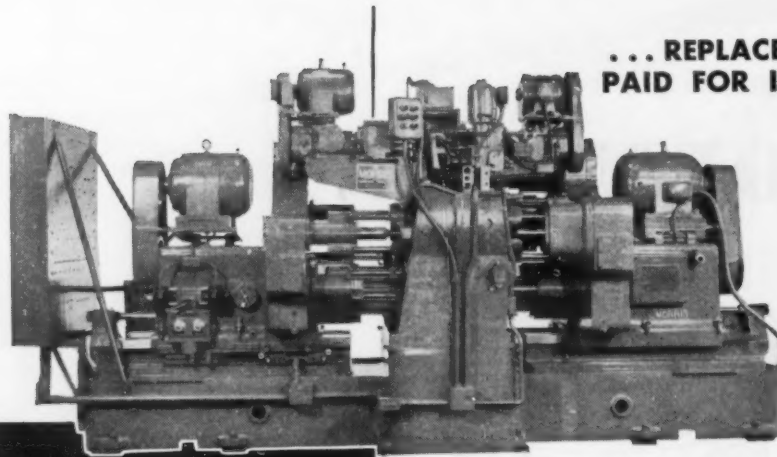
**NO OPERATOR FATIGUE** in locating and relocating of Drill Arm. See further comparisons in Spacer catalog.

When writing, mention "EVOLUTION".

## THE BULLARD co.

BRIDGEPORT 2,  
CONNECTICUT

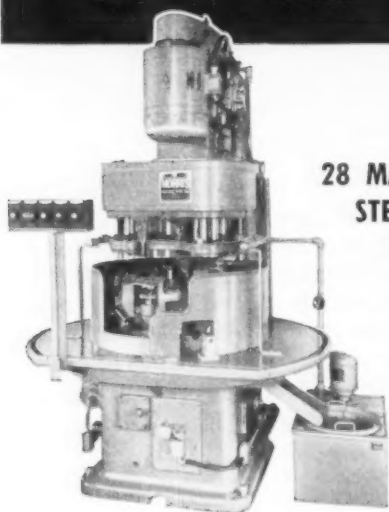




... REPLACED 6 OLD MACHINES  
PAID FOR ITSELF IN 39 WEEKS!

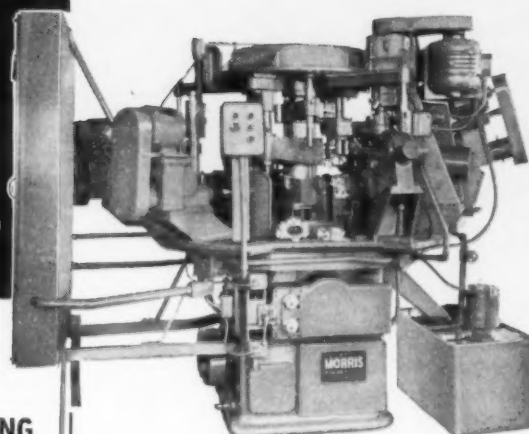
Thirty-eight drilling, reaming, countersinking, radius forming and tapping operations are performed on refrigeration parts by this Two-Way Horizontal, Eight Station Automatic Indexing Machine. Production rate is 150 pieces per hour at 80% efficiency.

**Want PRECISION  
PRODUCTION  
LIKE THIS?...**



**28 MACHINING  
STEPS IN 18  
SECONDS!**

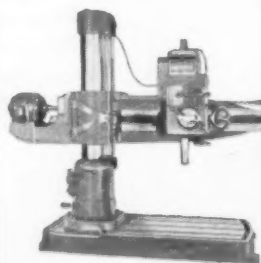
Drilling, countersinking and reaming torque converter pump hubs, this Six Station Automatic Indexing Machine turns out 200 pieces per hour for a noted auto manufacturer.



... 300 PIECES PER HOUR!

Either right or left hand carburetor air horns are drilled, faced and tapped ... 22 operations ... at a production rate of five per minute on this Six Station, Vertical Center Column Machine.

Eliminate multiple handling and multiplied cost in multiple drilling, reaming, tapping and similar operations with Morris MOR-SPEED Production Machines. Morris Engineers will gladly prove that high precision production can be yours ... with worth-while savings in time, labor and space. Write for additional details.



Morris also builds a line of 9 and 11 inch Column Radial Drills with outstanding features contributing to easy operation, sustained accuracy and long service life. Catalog on request.

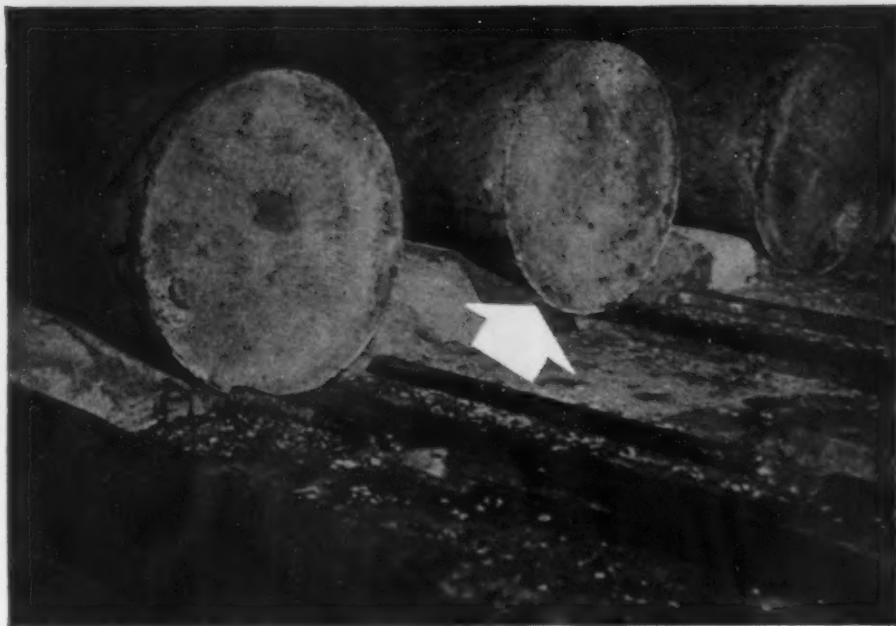


"A better product  
at less cost—with  
PRODUCTION *plus* PRECISION"

**THE MORRIS**  
MACHINE TOOL COMPANY

935 HARRIET ST., CINCINNATI 3, OHIO

# STEEL SKIDS LASTED *5 weeks*



Brass billets, 6 $\frac{3}{4}$ " and 8" dia., are heated in this extrusion mill furnace. It is approximately 5' wide by 38' long. Gas is the fuel.

# "CARBOFRAX" SKIDS *156 weeks*

CARBOFRAX silicon carbide refractories are among the hardest of man made products. Used for furnace skid rails, they will almost always outwear and outperform metal skids.

This furnace, for example, formerly used a chrome hearth in the hot zone and alloy rails in cooler sections. These demanded constant attention, a never-ending series of repairs and replacements. Complete rail and hearth replacement was needed every two to five weeks. Rail warpage between times caused frequent pile-ups and wrecks.

*CARBOFRAX skids in this same furnace lasted over three years — required little or no interim maintenance.*

Billets now slide through more easily because of lower frictional resistance. Pile-ups have been eliminated. And there's no marking or pick-up. Moreover, operating costs and production have benefited from the reduced downtime.

**Super Refractories by**

## **CARBORUNDUM**

Dept. B-32, Refractories Div.

Trade Mark  
The Carborundum Company

Perth Amboy, N. J.

*"Carborundum" and "Carbofrax" are registered trademarks which indicate manufacture by The Carborundum Company.*

March 27, 1952

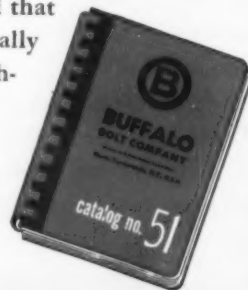
Our  
Specialty is  
something  
**SPECIAL**




When the products you make call for a special fastener... to add extra holding strength, simplify design and production requirements or to cut costs... you'll find that

it pays to call us in. Circle **®** fasteners, individually designed to your jobs, are made by modern methods to meet volume demands.

To simplify specifying and ordering... be sure you have the latest catalog. No. 51 is the most complete and concise you can use. Write for your copy.





# BUFFALO

## BOLT COMPANY

Division of Buffalo-Eclipse Corporation

North Tonawanda, N. Y.

Sales Offices in Principal Cities

PRODUCERS OF CIRCLE **®** PRODUCTS—BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS

## Personnel

*Continued*

**Hans Helmle**, appointed regional service manager, and **Charles Williams**, regional comptroller, Los Angeles office, **FRUEHAUF TRAILER CO.**, Detroit.

**Frank G. Tuerk**, appointed works manager, **PITTSBURGH FORGINGS CO.**, Coraopolis, Pa.

**Charles R. Skinner**, promoted to purchasing agent of raw materials, **PRATT & WHITNEY AIRCRAFT DIV.**, United Aircraft Corp., East Hartford, Conn.

**H. M. Killmar**, named assistant works engineer, Refractories Div., **CARBORUNDUM CO.**, Perth Amboy, N. J.

**P. W. Moehle**, appointed sales manager of national accounts, **DETREX CORP.**, Detroit.

**John I. Moss**, named industrial sales manager, **GEORGE PETITT CO.**, Chicago.

**John Monahan**, appointed New England district manager, **BRISTOL BRASS CORP.**, Bristol, Conn.

**Vincent L. Bradford**, appointed director of advertising, **MILFORD RIVET & MACHINE CO.**, Milford, Conn.

**Earl D. Hoyt**, joined Dallas staff as field engineer, **LAMSON CORP.**, Syracuse, N. Y.

**John Kafka**, joined the Ore & Metal Dept., **W. R. GRACE & CO.**, New York.

## OBITUARIES

**Heyman Rosenberg**, 78, founder and director, **Parker-Kalon Corp.**, New York.

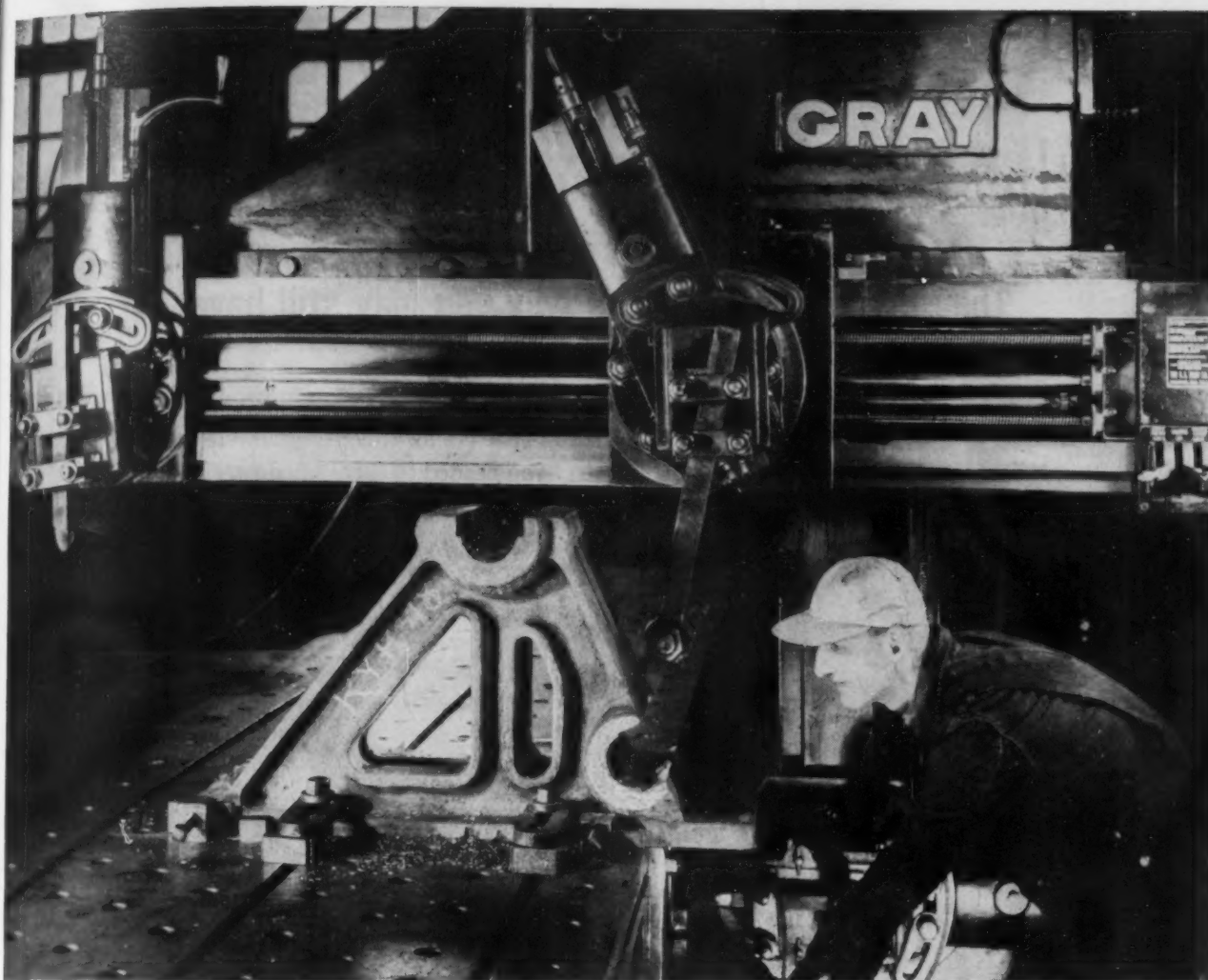
**Henry K. Bourne**, vice-president, **Oglebay, Norton & Co.**, Cleveland.

**Nathan C. Harrison**, retired president, **Harrison Abrasive Div.**, Metals Disintegrating Co., Manchester, N. H.


**William McKinnie Green**, manager of the Ore Sales Dept., **Cleveland-Cliffs Iron Co.**, Cleveland.

**Hyman L. Berkman**, 64, president of **Steel Trading Corp.**, Pittsburgh.





## His smooth handling brings you better materials - handling

 The operator of this giant planer at Barium's Clyde Iron Works, Inc., is really making things smooth for you.

For the steel casting his planer is smoothing off is typical of castings being used by Clyde in fabricating the finest modern materials-handling equipment . . . Whirley cranes, hoists, winches, derricks . . . as well as pile drivers and road rollers.

Whether you need an end-product

or raw material, if it's steel, one or more of Barium's fifteen subsidiaries can probably supply you.

For Barium supplies industry with steel in many forms, quality-controlled from blast furnace to finished product. Barium is ready to work as a self-contained unit to speed urgently needed orders. Address your steel needs to Barium Steel Corporation at 25 Broad Street, New York City, New York.



### BOLTS



Bayonne Bolt Corporation

### STEEL PLATE



Central Iron and Steel Company

### PIG IRON



Chester Blast Furnace

### CRANES AND HOISTS



Clyde Iron Works, Inc.

### SPRINGS



Cuyahoga Spring Company

### BOLTS AND NUTS



Erie Bolt and Nut Company

### METAL STAMPINGS



Geometric Stamping Company

### DROP FORGINGS



Globe Forge, Inc.

### HEAVY FLAT DIE FORGINGS



Industrial Forge and Steel, Inc.

### AIRCRAFT ENGINES AND PRECISION ASSEMBLIES



Jacobs Aircraft Engine Company

### MARINE DIESEL AND GASOLINE ENGINES



Kermath Manufacturing Company  
Kermath Limited (Canada)

### STRUCTURAL SHAPES AND STEEL FABRICATIONS



Phoenix Bridge Company  
Phoenix Iron and Steel Company

### BARGES AND TUGS



Wiley Manufacturing Company

# Do you Recognize the Steel Parts Pictured Below?

**They represent 9 reasons why you may still have  
trouble getting Inland Steel**

In spite of Inland's record-shattering production year (12 all-time records were broken in 1951), Uncle Sam allocated much of the steel you needed to the Armed Services. That's why Inland is adding capacity to give you the steel you need.



1. Section of aircraft landing mat
2. Ration cans
3. Frame for army cot
4. Aviation gas truck tank
5. 105 mm. howitzer gun tube
6. Barbed wire entanglement post
7. 5 gallon "Blitz" can for gas or water
8. Forging for 105 mm. shell
9. Fin assembly for 500 lb. cluster bomb



**INLAND STEEL COMPANY**  
38 South Dearborn Street • Chicago 3, Illinois




## 2 SPINDLES OR 200—WORK OUT ANY SET-UP TO SUIT YOUR OWN NEED with DELTA DRILL PRESSES

For simultaneous performance of one operation or sequence-performance of such operations as drilling, countersinking and boring, Delta drill presses have the flexibility that makes any set-up not merely possible, but easy.

Low in cost, easy to maintain, readily portable, these drill presses are good examples of fine engineering, rugged construction and compact design—an ideal combination that has made them exceedingly popular.

Patented spindle drive and mounting assures accuracy—and many useful attachments make possible an unusually wide variety of machining operations.

Two models: 14 inch and 17 inch.

DELTA POWER TOOLS Another  Product

### DESIGN YOUR OWN MULTIPLE DRILL SET-UP WITH DELTA SECTIONAL TABLES

Sectional tables consist of center sections to be bolted together between end sections, forming a smooth, sturdy working surface ideal for easy movement of the work through a series of operations.

*There's a Delta Power Tool for Your Job—*

WOOD OR METAL

**53 MACHINES 246 MODELS**  
More than 1300 Accessories

For Delta Dealers, see your  
Classified Phone Directory under "Tools"

**DELTA**  
MILWAUKEE

DELTA POWER TOOL DIVISION

**Rockwell** MANUFACTURING  
COMPANY

631 C East Vienna Avenue, Milwaukee 1, Wisconsin

☐ Please send new Delta AB-51 Catalog

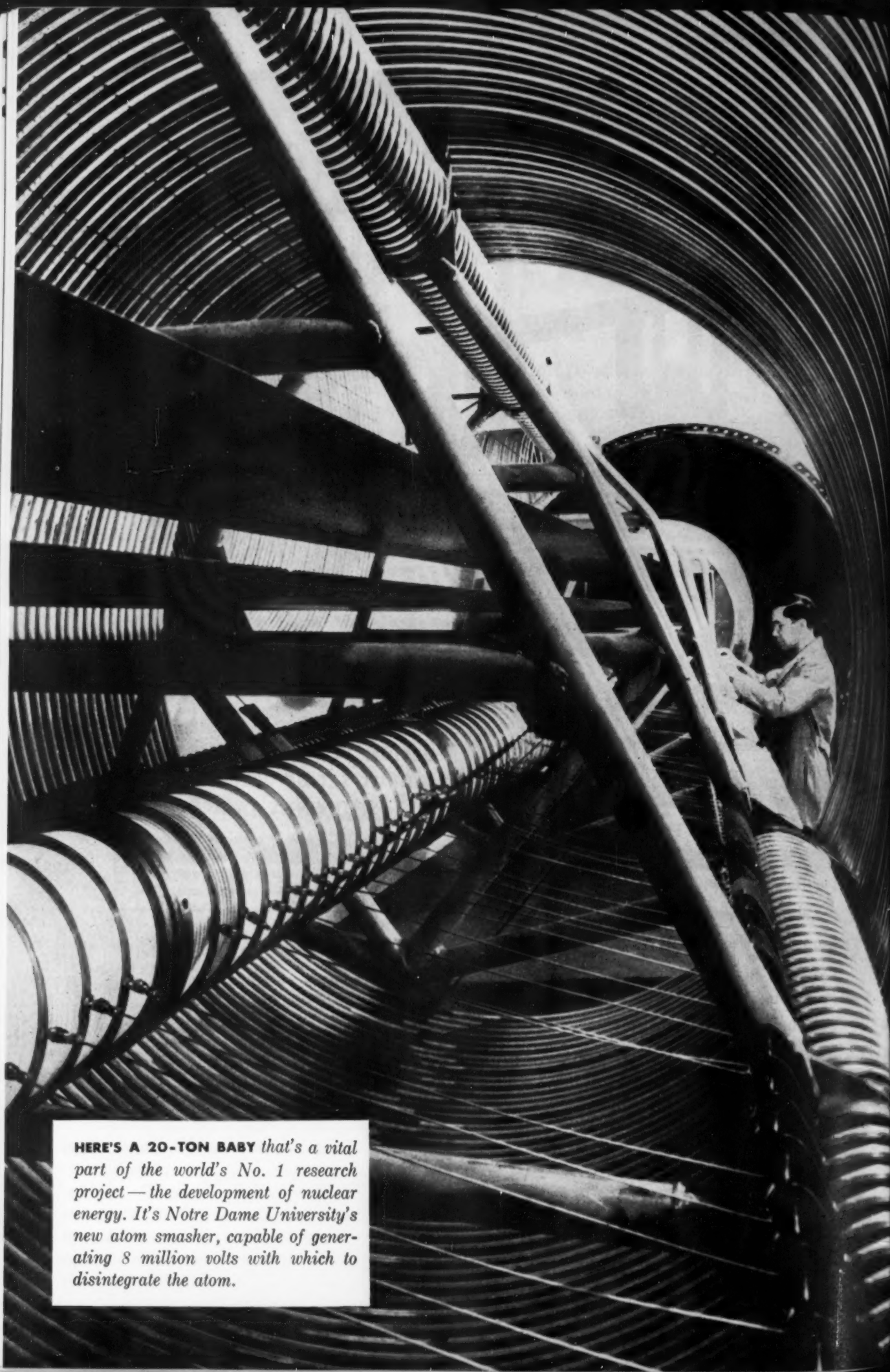
Name \_\_\_\_\_ Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_





**HERE'S A 20-TON BABY** that's a vital part of the world's No. 1 research project—the development of nuclear energy. It's Notre Dame University's new atom smasher, capable of generating 8 million volts with which to disintegrate the atom.

# there's only one No. 1 in metalworking

*Through constant research studies  
The IRON AGE stands ready to offer  
more market information than any other  
publication in the metalworking field.*

At your service! That's The IRON AGE... whether or not you are an advertiser. Continuing surveys of the market, of buying influences and of products sold to the industry provide anyone selling to metalworking with *more* help and useful information than offered by any other metalworking medium. Over 20 market and buying influence studies are available. Accuracy of the sample is insured by a detailed census of all metalworking plants employing 20 or more plant workers, kept up to date on 19,000 IBM cards. And if your product is not among those already surveyed, we will be glad to help

you get the data you want. Yes—accurate metalworking market information—another reason why The IRON AGE is No. 1 in metalworking.

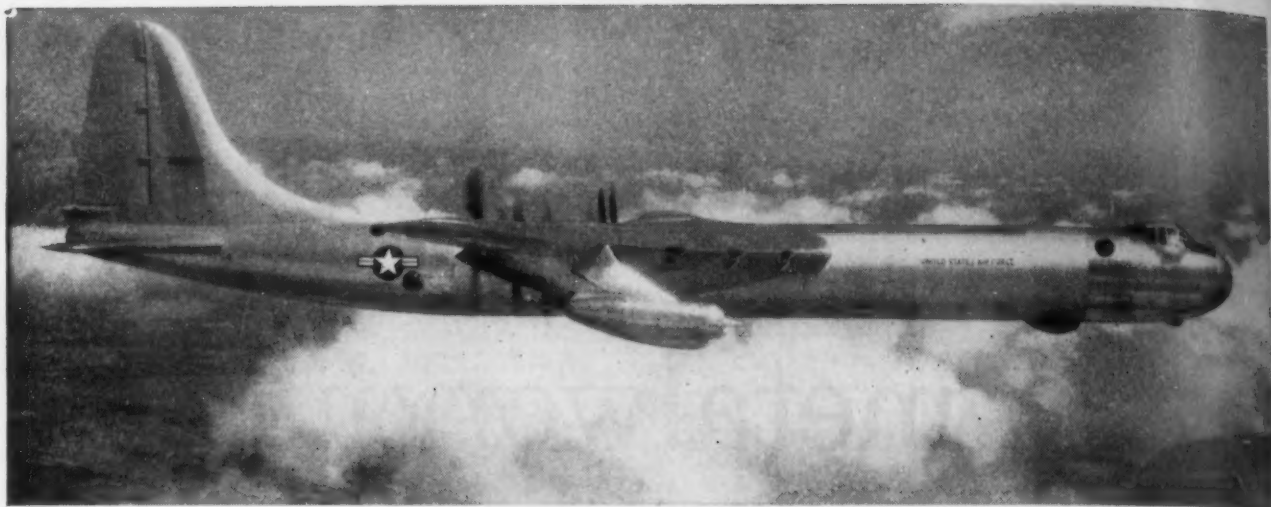
No. 1... IN PLANT COVERAGE  
No. 1... IN WEEKLY CIRCULATION  
No. 1... IN READERSHIP SURVEYS  
No. 1... IN MARKET COVERAGE  
No. 1... IN ADVERTISING VOLUME

*No. 1 in Metalworking...  
America's No. 1 Market*

*The* **IronAge**

A CHILTON PUBLICATION, 100 E. 42nd ST., N. Y. 17, N. Y.





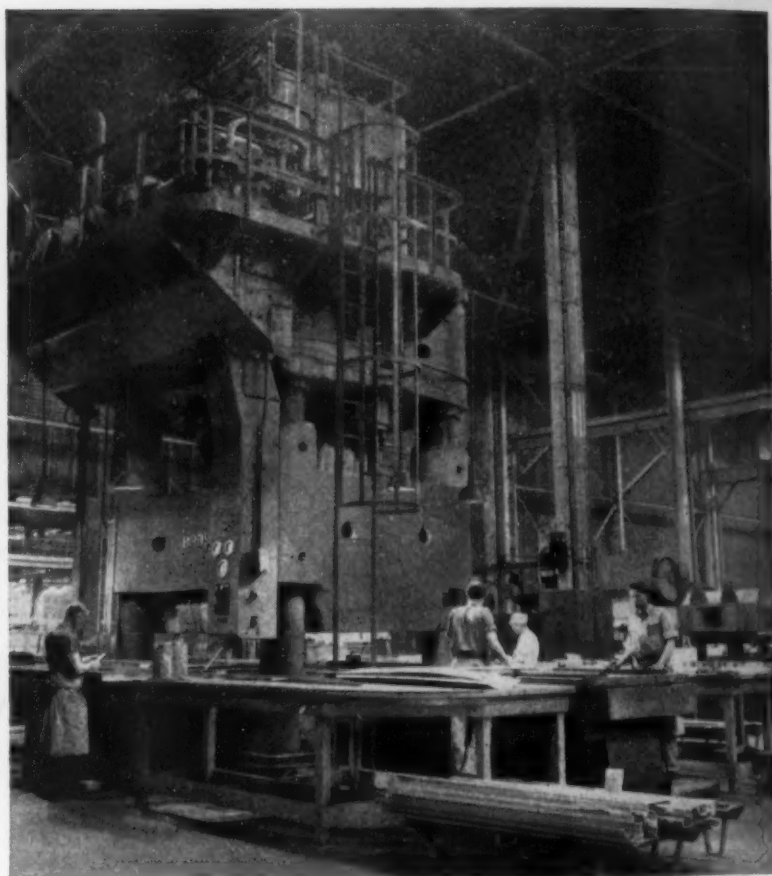
# **BIRDSBORO**

## *Hydraulic Press*

helps speed

## *CONVAIR B-36 PRODUCTION*

BIRDSBORO hydraulic presses have made a name for themselves in the aircraft industry as well as other metalworking plants by stepping up production of formed metal parts. BIRDSBORO presses are made in a wide range of types and sizes—engineered for high efficiency and economy in the specific jobs for which they are intended. For competent help in solving your press problems, you can call on—and depend on BIRDSBORO engineers.



*5,000 ton hydraulic rubber pad press with automatic four station, four-way shuttle type loading tables.*

# **BIRDSBORO**

## **STEEL FOUNDRY & MACHINE CO.**

Birdsboro, Penna.

**HYDRAULIC  
PRESSES**

Designers and Builders of:

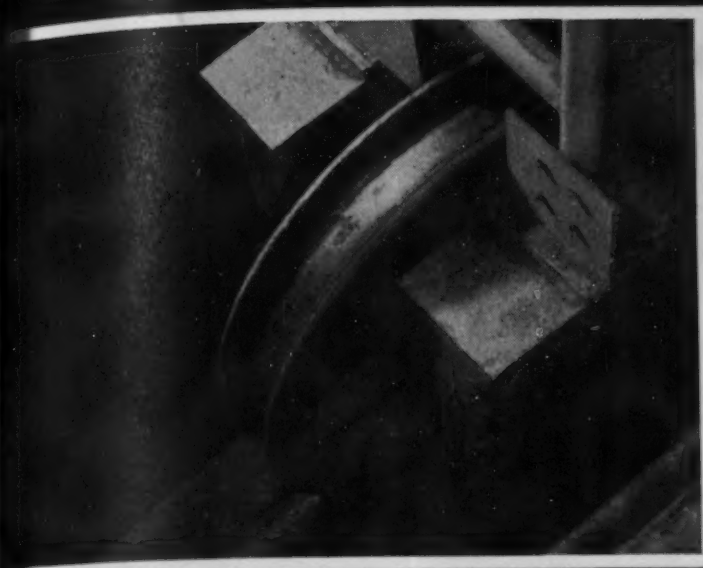
Hydraulic Presses • Special Machinery • Steel Castings  
Crushing Machinery • Rolls • Steel Mill Machinery

### AGENTS IN:

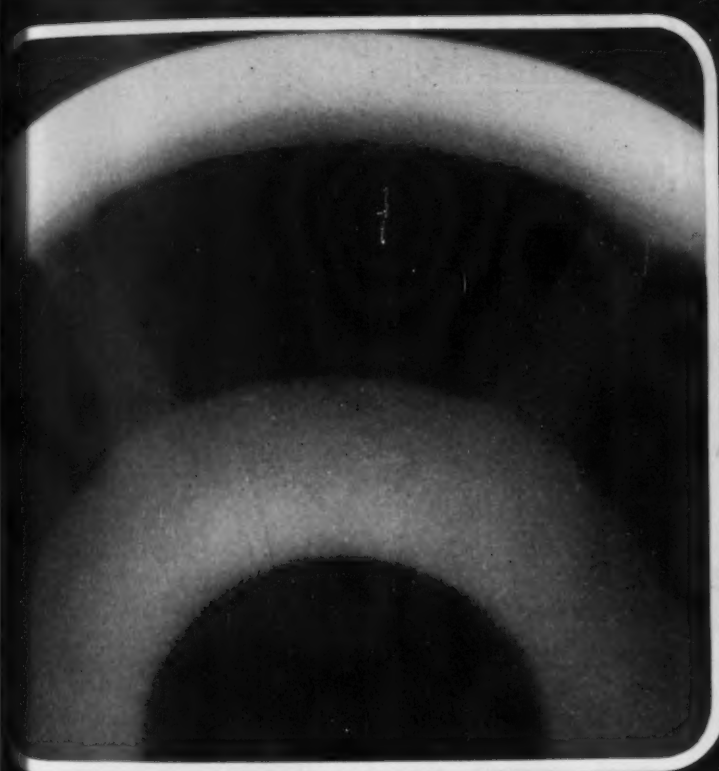
Boston, Massachusetts — Cincinnati, Ohio —  
Dayton, Ohio — Kansas City, Missouri — Los  
Angeles, California — Oklahoma City, Oklahoma  
— Pittsburgh, Pennsylvania — St. Louis, Missouri  
— Tulsa, Oklahoma

HP 10-51-R





**Big loads  
going up—**



**SO  
RADIOGRAPHY  
checks the  
crane wheel**

**Y**OU'RE dealing with big stresses and strains when you jockey multi-ton loads of metal around your plant. Every part of the crane must be ready for its job—with an extra margin.

That is why this crane wheel was checked by radiography. It was the one way to prove whether gas pockets or other internal defects might exist to cause a hazard.

Foundries working with all kinds of metals and alloys are finding it increasingly important to radiograph their castings. Then they know only quality

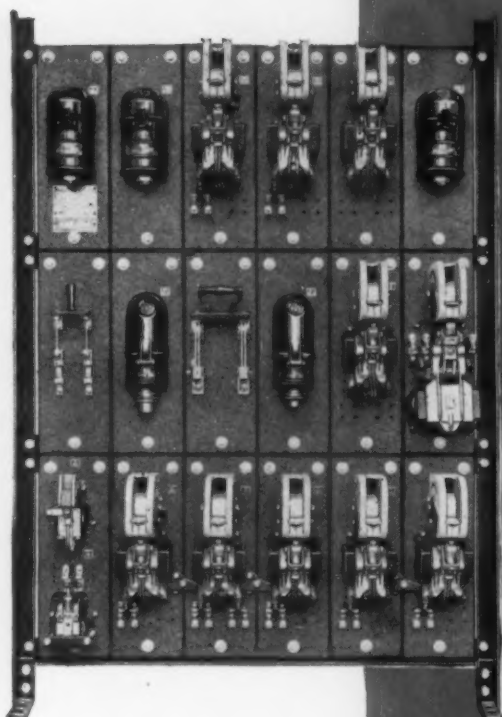
products are released. Also in planning long production runs, radiography of pilot castings often indicates ways to improve methods and increase yield.

See your x-ray dealer. He'll gladly show you how radiography can increase your production and improve quality. Also send for a free copy of "Radiography as a Foundry Tool."

**EASTMAN KODAK COMPANY  
X-ray Division  
Rochester 4, N. Y.**

**Radiography...**  
another important function of photography





LOOK for these NAMES when buying Motor Control

- 1 LINE-ARC Contactors
- 2 TIME-CURRENT Acceleration (D-c)
- 3 FREQUENCY RELAY Acceleration (A-c)
- 4 WRIGHT CIRCUIT Hoist Control (D-c)
- 5 YOUNGSTOWN Hoist Limit Stops
- 6 TYPE WB Brakes
- 7 CAM Master Switches
- 8 MANUAL-MAGNETIC Disconnect Switches
- 9 CONTRA-TORQUE Hoist Control (A-c)
- 10 TAB-WELD Resistors

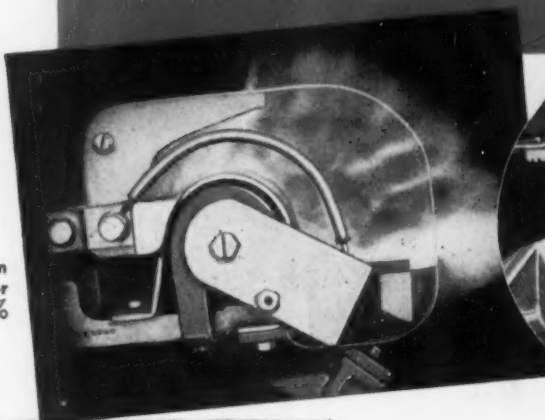
These FUNCTIONAL NAMES Speak for Themselves



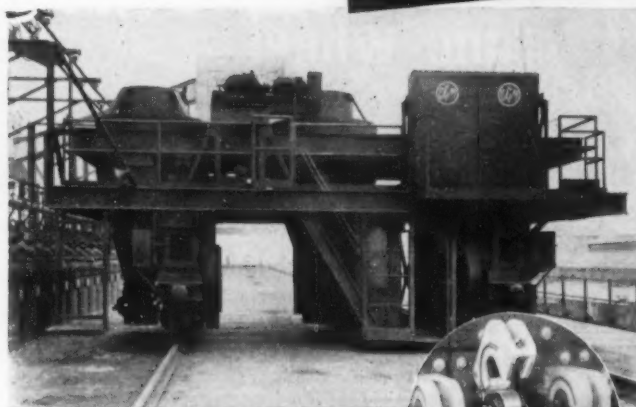
Upkeep is LOWER because

Destructive burning of arc shields is eliminated as evident in the following statement.

Glass arc shields on demonstration contactor are unharmed as 300% load is interrupted.

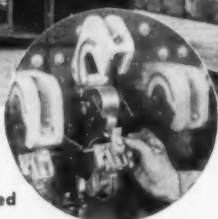


Cool operation lengthens contact life.



Koppers Larry Car for charging coal into ovens, using LINE-ARC contactor controllers.

Contacts are easily reached with standard wrench.



EC&M LINE-ARC Contactor Control has earned a far-reaching reputation. Operators like the quick response, the ease of getting motors under way, the ability to inch accurately. Maintenance men appreciate the fewer upkeep problems, and when attention is needed, the ease of inspection or replacement of parts. Plant managers value the freedom from shutdowns, welcome the low operating expense.

Let an EC&M engineer assist in revamping existing installations — in planning control matched to new requirements.

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET

CLEVELAND 4, OHIO



# GRAPH-MO STEEL SETS NEW STANDARDS OF GAGE PERFORMANCE!

***Most stable gage steel ever made—outwears others 3 to 1!***

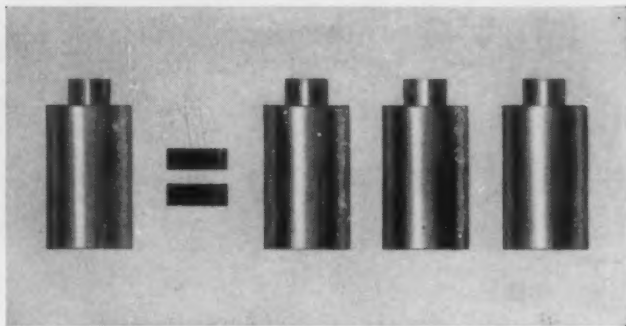


## 12-YEAR STABILITY TEST SHOWS ONLY 10 MILLIONTHS CHANGE IN GRAPH-MO STEEL GAGE

The introduction of Graph-Mo steel to the gage industry has opened the door to new standards of gage performance unattainable with conventional gage steels! New stability! New wearability! New machinability!

Proof of Graph-Mo's outstanding stability is the series of measurements shown below, taken on a typical Graph-Mo steel plug gage. After a period of twelve years this gage measured within ten millionths of an inch of its original dimension.

1940—1.73996	1944—1.73996
1941—1.73995	1945—1.73997
1942—1.73998	1948—1.73997
1943—1.73997	1951—1.73995



## REPORTS FROM USERS SHOW GRAPH-MO STEEL OUTWEARS OTHER TOOL STEELS 3 TO 1

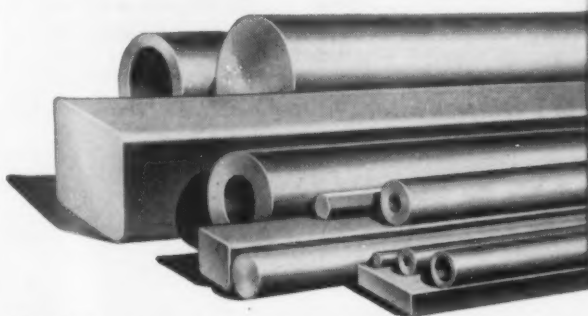
Graph-Mo—a Timken® graphitic tool steel—contains free graphite and diamond-hard carbides. As a result, it has minimum tendency to scuff, or gall, and stubbornly resists wear. Reports from users who have switched to Graph-Mo steel gages show that it outwears other tool steels an average of 3 to 1!

Graph-Mo machines 30% faster than other tool steels, takes a smoother finish, and *is available now!*

You can always tell Graph-Mo by its "graphitic look"—tiny, scattered, parallel marks barely visible on the surface of a piece of polished Graph-Mo. This built-in "trade-mark", result of free graphite in its structure, can't be duplicated in other steels. Look for it, insist upon it, next time you buy gages.

Write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



**TIMKEN**  
TRADE-MARK REG. U.S. PAT. OFF.  
**Fine Alloy**  
**STEEL**

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

March 27, 1952



# We need 3000 Carloads of Scrap a Day

Every pound of dormant scrap you can furnish will help to keep the steel mills and foundries producing



Steel mill furnaces are gobbling up scrap faster than it's being delivered. To maintain planned schedules of steel production for both military and civilian purposes, the mills must have more iron and steel scrap.

## Get in the Scrap—Yourself!

Whatever your business, you undoubtedly have scrap. If there's dust on it or rust on it—it may be scrap. If it's scrap—it's needed.

Turn it over to your local scrap dealer and help lick this critical scrap shortage.

## What you can do to help

1. Appoint one top official in your plant to take full responsibility for surveying the plant and getting out the scrap.
2. Consult with your local Scrap Mobilization Committee about its program to help out in the scrap crisis. The nearest office of the National Production Authority, Department of Commerce, can tell you who your local Scrap Mobilization chairman is.
3. Call in your local scrap dealer to help you work out a practical scrapping program. Non-ferrous scrap needed, too!
4. Write for free booklet, "Top Management: Your Program for Emergency Scrap Recovery", addressing Advertising Council, 25 W. 45th St., N. Y. 19.

SCRAPPY SAYS:

**AID DEFENSE**  
**MORE SCRAP**  
**TODAY...**  
**MORE STEEL**  
**TOMORROW**



## FACTS YOU SHOULD KNOW ABOUT STEEL PRODUCTION

Steel production.....	1950.....	97,800,000 net tons
Estimated capacity.....	1952.....	119,500,000 net tons
Purchased scrap used*.....	1950.....	29,500,000 gross tons
Estimated purchased scrap requirement*..	1952.....	36,200,000 gross tons

\*All consumers

*This advertisement is a contribution, in the national interest, by*

*The Iron Age*

**Retaining**

**rings**

**with**

**lots**

**of**

**snap**



**THEY'RE MADE OF**

**BERYLCO**

**BERYLLIUM COPPER!**

Retaining, or snap, rings are rapidly replacing nuts, machined or pressed shoulders, collars and many other positioning thrust devices. That's because they're easy to assemble and can be used over and over again. Waldes Truarc Retaining Rings, made by Waldes Kohinoor Inc., have won wide acceptance in valve and pump parts, motors, potentiometers, selsyns, instruments, business machines and a wide variety of other applications.

It is easy to see why Waldes employs Berylco beryllium copper for many of its retaining rings.

For one, specifications say a ring must have enough elasticity to open or contract at least 10 percent of its free diameter without taking a permanent set. Such elasticity is only one of Berylco's many desirable properties. Because it is an age-hardening alloy, it can be stamped in a relatively soft condition, then heat-treated for high strength and hardness. It is also resistant to corrosion and vibrational fatigue, is nonmagnetic, and has excellent electrical conductivity. In blanking, it is cleaner cutting, gives better edges and longer die life. For instance, it is possible to blank 100,000

of the  $\frac{1}{8}$ " diameter rings with a variation in diameter of only .002".

This application suggests many other design problems which you can solve profitably with Berylco beryllium copper. It will pay you to take advantage of the technical and engineering know-how of the world's largest producer of beryllium copper. Write or phone any of the offices listed below.

**Tomorrow's products are planned today  
—with Berylco beryllium copper  
SAMPLE MATERIAL AVAILABLE FOR  
TESTING PURPOSES**

**BERYLCO**

**THE BERYLLIUM CORPORATION**

**DEPT. 2C, READING 6, PENNSYLVANIA**

New York • Springfield, Mass. • Cleveland • Dayton • Detroit • Chicago • Minneapolis • St. Louis • Seattle • San Francisco • Los Angeles

*Representatives in principal world-trade centers*

March 27, 1952

155

# Nonferrous Prices

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 76S-O, 76S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 76S-O, 76S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 76S-O, 76S-OAL, 52.2¢.

Plate 1/4 in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 76S-O, 76S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 26, 39.6¢ to 116¢; 36 to 38, 47.2¢ to 170¢.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 33.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 35¢.

Screw Machine Stock: Rounds, 11S-T3, 1/4 to 11/32 in., 59.5¢ to 42¢; 1/2 to 1 1/2 in., 41.5¢ to 39¢; 1 1/2 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 6000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 39.5¢ to 29¢; 52S, 45¢ to 35¢; 61S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 76S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 65S-ST-5, OD in in., 1/4 to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., 1.42¢; 96 in., 1.622¢; 120 in., 1.902¢; 144 in., 2.284¢. Gage 0.24 x 28 in., 72 in., 1.879¢; 96 in., 1.839¢; 120 in., 2.299¢; 144 in., 2.759¢. Coiled Sheet: 0.019 in. x 28 in., 28.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

### Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, 1/4 in., 62¢; 3/16 in., 65¢; 1/2 in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M. diam in., 1/4 to 0.311 in., 74¢; 1/2 to 3/4 in., 57.5¢; 1 1/4 to 1.749 in., 53¢; 2 1/2 to 5 in., 48.5¢. Other alloys higher. Base up to 1/4 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. in weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape; Up to 1/2 lb, 10,000 lb, 1/2 to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M. wall thickness, outside diam, in., 0.049 to 0.057; 1/4 in. to 5/16, 1.40¢; 5/16 to 3/4, 1.26¢; 1/2 to 3/4, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, 1/2 to 3/4, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 66¢. Other alloys higher. Base, OD in in.: Up to 1 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

### Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, 115¢; Plate, HR, 112¢; Wire, rolled and/or drawn, 110¢; Bar, HR or forged, 86¢; Forgings, 86¢.

### Nickel and Monel

(Base prices, f.o.b. mill)

"A" Nickel Monel  
Sheets, cold-rolled ..... 77 60 1/2  
Strip, cold-rolled ..... 83 63 1/2  
Rods and bars ..... 73 58 1/2  
Angles, hot-rolled ..... 73 58 1/2  
Plates ..... 75 59 1/2  
Seamless tubes ..... 106 93 1/2  
Shot and blocks ..... 53 1/2

### Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	41.68	37.53	41.28
Copper, h-r		37.53	
Copper, drawn		38.78	
Low brass	39.67	39.36	
Yellow brass	38.28	37.97	
Red brass	46.14	39.83	
Naval brass	43.20	37.26	38.52
Landed copper	41.13	41.58	
Com'l bronze	46.13	40.82	
Mang. bronze	46.32	40.81	43.37
Phos. bronze	61.07	61.32	
Muntz metal	41.18	36.74	37.99
Ni silver, 10 pct	49.82	52.04	

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed ..... 19.00  
Aluminum pig ..... 18.00  
Antimony, American, Laredo, Tex. .... 50.00  
Beryllium copper, 3.75-4.25% Be... 1.56  
Beryllium aluminum 5% Be, Dollars per lb contained Be ..... \$69.00  
Bismuth, ton lots ..... \$2.25  
Cadmium, del'd ..... \$2.55  
Cobalt, 97-99% (per lb).....\$2.40 to \$2.47  
Copper, electro, Conn. Valley ..... 24.50  
Copper, Lake, delivered ..... 24.625  
Gold, U. S. Treas., dollars per oz. .... \$35.00  
Indium, 99.8%, dollars per troy oz. .... \$2.25  
Iridium dollars per troy oz. .... \$200  
Lead, St. Louis ..... 13.80  
Lead, New York ..... 19.00  
Magnesium, 99.8+%, f.o.b. Freeport, Tex. 10,000 lb. .... 24.50  
Magnesium, sticks, 100 to 500 lb. .... 42.00 to 44.00  
Mercury, dollars per 76-lb. flask, f.o.b. New York ..... \$207 to \$210  
Nickel electro, f.o.b. N. Y. warehouse 59.58  
Nickel oxide sinter, at Copper Creek, Ont., contained nickel .... 52.75  
Palladium, dollars per troy oz. .... \$24.00  
Platinum, dollars per troy oz. .... \$90 to \$93  
Silver, New York, cents per oz. .... 88.00  
Tin, New York ..... \$1.215  
Titanium, sponge ..... \$5.00  
Zinc, East St. Louis ..... 19.50  
Zinc, New York ..... 20.20  
Zirconium copper, 50 pct ..... \$6.30

## REMETLED METALS

### Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot  
No. 115 ..... 27.25  
No. 120 ..... 26.75  
No. 123 ..... 26.25  
80-10-10 ingot  
No. 305 ..... 33.00  
No. 315 ..... 30.50  
88-10-2 ingot  
No. 210 ..... 41.50  
No. 215 ..... 40.00  
No. 245 ..... 34.50  
Yellow ingot  
No. 405 ..... 33.25  
Manganese bronze  
No. 421 ..... 30.50

### Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper, max. .... 20.6  
0.60 copper, max. .... 30.4  
Piston alloys (No. 122 type) ..... 31.2  
No. 12 alum. (No. 2 grade) ..... 19.5  
108 alloy ..... 20.6  
195 alloy ..... 20.8  
13 alloy ..... 20.8  
ASX-679 ..... 20.5

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2% ..... 18.80  
Grade 2—92-95% ..... 18.60  
Grade 3—90-92% ..... 18.40  
Grade 4—85-90% ..... 18.20

## ELECTROPLATING SUPPLIES

### Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper  
Cast, oval, 15 in. or longer ..... 37.84  
Electrodeposited ..... 33%  
Flat rolled ..... 38.34  
Forged ball anodes ..... 43  
Brass, 80-20  
Cast, oval, 1b in. or longer ..... 34%  
Zinc, oval ..... 26 1/2  
Ball anodes ..... 25 1/2  
Nickel 99 pct plus  
Cast ..... 76.00  
Rolled, depolarized ..... 77.00  
Cadmium ..... \$2.80  
Silver 999 fine, rolled, 100 oz lots, per troy oz., f.o.b. Bridgeport, Conn. .... 97 1/2

### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum ..... 63  
Copper sulfate, 99.5 crystals, bbl. .... 12.85  
Nickel salts, single or double, 4-100 lb bags, frt. allowed ..... 20 1/2  
Nickel chloride, 375 lb drum ..... 27 1/2  
Silver cyanide, 100 oz lots, per oz. .... 67 1/2  
Sodium cyanide, 96 pct domestic 200 lb drums ..... 19.25  
Zinc cyanide, 100 lb drum ..... 47.7

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turn-
Copper	31 1/2	30 1/2
Yellow brass	19 1/2	17 1/2
Red brass	20 1/2	19 1/2
Comm. bronze	20 1/2	19 1/2
Mang. bronze	18 1/2	17 1/2
Brass rod ends	18 1/2	17 1/2

### Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire ..... 19.35  
No. 2 copper wire ..... 17.75  
Light copper ..... 16.50  
Refinery brass ..... 17.25  
Radiators ..... 14.75  
\* Dry copper content.

### Ingot Maker's Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire ..... 19.35  
No. 2 copper wire ..... 17.75  
Light copper ..... 16.50  
No. 1 composition ..... 18.50  
No. 1 comp. turnings ..... 18.25  
Rolled brass ..... 16.50  
Brass pipe ..... 16.50  
Radiators ..... 14.75

### Aluminum

Mixed old cast ..... 9.75  
Mixed new clips ..... 11.00  
Mixed turnings, dry ..... 9.50  
Pots and pans ..... 9.35

### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 heavy copper and wire. 18%—19%  
No. 2 heavy copper and wire. 17%—17 1/2%  
Light copper ..... 16—16 1/2%  
New type shell cuttings ..... 16—16 1/2%  
Auto radiators (unsweated) ..... 14 1/4—14 1/2%  
No. 1 composition ..... 18—18 1/2%  
No. 1 composition turnings ..... 17 1/2—18%  
Unlined red car boxes ..... 16%—17 1/2%  
Cocks and faucets ..... 15 1/2—16%  
Mixed heavy yellow brass ..... 12—12 1/2%  
Old rolled brass ..... 13—15 1/2%  
Brass pipe ..... 16—16 1/2%  
New soft brass clippings ..... 16—16 1/2%  
Brass rod ends ..... 15 1/2—16%  
No. 1 brass rod turnings ..... 15—15 1/2%

### Aluminum

Alum. pistons and struts ..... 6%—7 1/2%  
Aluminum crankcases ..... 7 1/2—8%  
2S aluminum clippings ..... 10%  
Old sheet and utensils ..... 7 1/2—8%  
Borings and turnings ..... 5—6%  
Misc. cast aluminum ..... 7 1/2—8%  
Dural clips (24S) ..... 7 1/2—8%

### Zinc

New Zinc clippings ..... 13 1/4—13 1/2%  
Old zinc ..... 10—10 1/2%  
Zinc routings ..... 6%—7%  
Old die cast scrap ..... 6%—7%

### Nickel and Monel

Pure nickel clippings ..... 35—36%  
Clean nickel turnings ..... 35—36%  
Nickel anodes ..... 35—36%  
Nickel rod ends ..... 35—36%  
New Monel clippings ..... 28—29%  
Clean Monel turnings ..... 20—21%  
Old sheet Monel ..... 28—29%  
Nickel silver clippings, mixed. 13—14%  
Nickel silver turnings, mixed. 12—13%

### Lead

Soft scrap, lead ..... 15%—16%  
Battery plates (dry) ..... 10—10 1/2%  
Batteries, acid free ..... 7—7 1/2%

### Magnesium

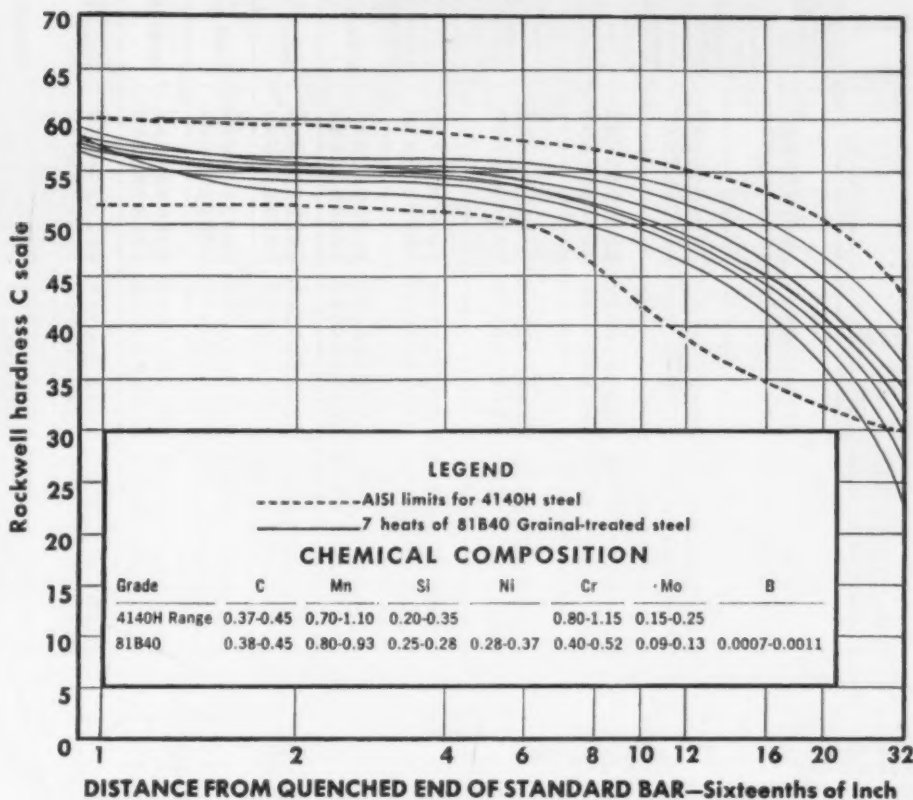
Segregated solids ..... 15—16%  
Castings ..... 14—15%

### Miscellaneous

Block tin ..... 100—110%  
No. 1 pewter ..... 80%  
No. 1 auto babbitt ..... 60%  
Mixed common babbitt ..... 16 1/4—16 1/2%  
Solder joints ..... 22—23%  
Siphon tops ..... 21—22%  
Small foundry type ..... 18 1/2—19%  
Monotype ..... 17 1/2—18%  
Lino. and stereotype ..... 16—16 1/2%  
Electrotype ..... 10—11%  
Hand picked type shells ..... 8%—9%  
Lino. and stereo. dross ..... 7 1/2—8%



## STANDARD (END QUENCH) HARDENABILITY CHART—



Consistent  
Hardenability obtained  
in Boron Steels  
made with  
**GRAINAL ALLOYS**

The most common test for boron steels is measurement of hardenability by the end quench or Jominy hardenability test. Today's steel substitutions are made on the basis of similar hardenability since a reasonable prediction can thus be made of the hardness and strength of a given part.

The curves above show the relationship between the hardenability of a series of seven heats of 81B40 steel and the hardenability band for 4140H steel, which it often replaces. The 81B40 heats were made in one electric furnace shop, and the remarkably consistent hardenability shown by the curves was obtained by the use of Grainal alloy as the means of adding the boron.

Consistent hardenability means consistent strength and hardness after heat treatment, which is the aim of every fabricator. The best proof that the Grainal alloys insure this objective is found in the successful use of three million tons of Grainal-treated steels.

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CHEMICALS AND METALS

# Scrap Prices

## Iron and Steel

## SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments. Shipping point and delivered prices calculated as shown below.)

GRADES	OPS No.	Basing Points															
		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown
No. 1 bundles	1	\$44.00	\$44.00	\$44.00	\$43.00	\$42.50	\$42.00	\$41.50	\$41.00	\$40.50	\$40.00	\$39.50	\$39.00	\$38.50	\$38.00	\$37.50	\$37.00
No. 1 busheling	2	44.00	44.00	44.00	43.00	42.50	42.00	41.50	41.00	40.50	40.00	39.50	39.00	38.50	38.00	37.50	37.00
No. 1 heavy melting	3	43.00	43.00	43.00	42.00	41.50	41.00	40.50	40.00	39.50	39.00	38.50	38.00	37.50	37.00	36.50	36.00
No. 2 heavy melting	4	43.00	43.00	43.00	42.00	41.50	41.00	40.50	40.00	39.50	39.00	38.50	38.00	37.50	37.00	36.50	36.00
No. 2 bundles	5	43.00	43.00	43.00	42.00	41.50	41.00	40.50	40.00	39.50	39.00	38.50	38.00	37.50	37.00	36.50	36.00
Machine shop turnings	6	34.00	34.00	34.00	33.00	32.50	32.00	31.50	31.00	30.50	30.00	29.50	29.00	28.50	28.00	27.50	27.00
Mixed borings and turnings	7	38.00	38.00	38.00	37.00	36.50	36.00	35.50	35.00	34.50	34.00	33.50	33.00	32.50	32.00	31.50	31.00
Shoveling turnings	8	38.00	38.00	38.00	37.00	36.50	36.00	35.50	35.00	34.50	34.00	33.50	33.00	32.50	32.00	31.50	31.00
Cast iron borings	10	38.00	38.00	38.00	37.00	36.50	36.00	35.50	35.00	34.50	34.00	33.50	33.00	32.50	32.00	31.50	31.00
No. 1 chemical borings	26	41.00	41.00	41.00	40.00	39.50	39.00	38.50	38.00	37.50	37.00	36.50	36.00	35.50	35.00	34.50	34.00
Forge crops	11	51.50	51.50	51.50	50.50	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50
Bar crops and plate	12	49.00	49.00	49.00	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00
Punchings and plate	14	46.50	46.50	46.50	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00	41.50	41.00	40.50	40.00	39.50
Electric furnace bundles	15	46.00	46.00	46.00	45.00	44.50	44.00	43.50	43.00	42.50	42.00	41.50	41.00	40.50	40.00	39.50	39.00
Cut struct., plate, 3 ft and less	16	47.00	47.00	47.00	46.00	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00	41.50	41.00	40.50	40.00
Cut struct., plate, 2 ft and less	17	49.00	49.00	49.00	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00
Cut struct., 1 ft and less	18	50.00	50.00	50.00	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00	43.50	43.00
Foundry steel, 2 ft and less	20	44.00	44.00	44.00	43.00	42.50	42.00	41.50	41.00	40.50	40.00	39.50	39.00	38.50	38.00	37.50	37.00
Foundry steel, 1 ft and less	21	46.00	46.00	46.00	45.00	44.50	44.00	43.50	43.00	42.50	42.00	41.50	41.00	40.50	40.00	39.50	39.00
Heavy trimmings	24	43.00	43.00	43.00	42.00	41.50	41.00	40.50	40.00	39.50	39.00	38.50	38.00	37.50	37.00	36.50	36.00
No. 1 RR heavy melting	RR 1	46.00	46.00	46.00	45.00	44.50	44.00	43.50	43.00	42.50	42.00	41.50	41.00	40.50	40.00	39.50	39.00
Scrap rails, random lengths	RR 14	49.00	49.00	49.00	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00
Scrap rails, 3 ft and less	RR 16	51.00	51.00	51.00	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00
Scrap rails, 2 ft and less	RR 17	52.00	52.00	52.00	51.00	50.50	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00
Scrap rails, 18 in. and less	RR 18	54.00	54.00	54.00	53.00	52.50	52.00	51.50	51.00	50.50	50.00	49.50	49.00	48.50	48.00	47.50	47.00
Revolving rails	RR 15	53.00	53.00	53.00	52.00	51.50	51.00	50.50	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00
Uncut tires	RR 20	48.00	48.00	48.00	47.00	46.50	46.00	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00	41.50	41.00
Cut tires	RR 21	51.00	51.00	51.00	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00
Cut bolsters and side frames	RR 23	49.00	49.00	49.00	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00	43.50	43.00	42.50	42.00
RR specialties	RR 24, 28, 29	51.00	51.00	51.00	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00
Solid steel axles	RR 25	58.00	58.00	58.00	57.00	56.50	56.00	55.50	55.00	54.50	54.00	53.50	53.00	52.50	52.00	51.50	51.00
No. 3 steel wheels	RR 27	51.00	51.00	51.00	50.00	49.50	49.00	48.50	48.00	47.50	47.00	46.50	46.00	45.50	45.00	44.50	44.00
Unassorted	RR 35	40.00	40.00	40.00	39.00	38.50	38.00	37.50	37.00	36.50	36.00	35.50	35.00	34.50	34.00	33.50	33.00

### Cast Scrap Ceilings

Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.	Price
Cupola cast	1	\$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	46.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry runout or prepared cupola drops is 75 pct of corresponding grade.

### Cast Prices

(Below-Ceiling Prices at Some Districts)

#### PITTSBURGH

(Delivered)

Drop broken mach'y cast	\$52.50 to \$53
Cupola cast	49.50 to 50
Heavy breakable	45.50 to 46

#### CHICAGO

(Delivered)

Cupola cast	\$45 to \$48
Stove plate	44 to 45
Heavy breakable	43 to 45
Drop broken machinery	48 to 49.50
Unstripped motor blocks	38 to 39
Charging box cast	45 to 48
Clean auto cast	48 to 50

#### PHILADELPHIA

(Delivered)

Cupola cast	\$50 to \$50.50
Clean auto cast	53 to 54
Unstripped motor blocks	40.00

#### CLEVELAND

(Delivered)

Unstripped motor blocks	\$40 to \$41
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#### BIRMINGHAM

(Delivered)

Cupola cast	\$41 to \$42
Stove plate	39 to 40
Charging box cast	39 to 40
Heavy breakable	36 to 37
Drop broken machinery	41 to 42
Unstripped motor blocks	36 to 37

#### ST. LOUIS

(Delivered)

Heavy breakable	\$45
Stove plate	42

#### NEW YORK

(Brokers' buying prices)

Drop broken machinery	\$49.50 to \$50.50
Mixed yard cast	46.50 to 47.50
Charging box cast	45.00 to 47.00
Heavy breakable	42.50 to 43.50
Unstripped motor blocks	40.00

#### BOSTON

(Brokers' buying prices)

Cupola cast	\$46
Stove plate	42 to 43
Unstripped motor blocks	35

#### DETROIT

(Brokers' buying prices)

Cupola cast	\$46
Charging box	45
Heavy breakable	43
Cast iron brake shoes	39
Stove plate	44
Unstripped motor blocks	40
Drop broken mach'y cast	50

#### CINCINNATI

(Delivered)

Unstripped motor blocks	\$40
Stove plate	45

#### BUFFALO

(F.o.b. shipping point)

Cupola cast	\$47 to \$48
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#### SAN FRANCISCO

(Delivered)

Cupola cast	\$42.50
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#### LOS ANGELES

(Delivered)

Cupola cast	\$46
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#### SEATTLE

(Delivered)

Cupola cast	\$38
Heavy breakable	32

SHIPPING POINT PRICES (Except RR scrap)—for shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the

basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is \$1.25 per gross ton except: Memphis, 9¢; Great Lakes ports, \$1.50¢, and New England ports, \$1.75. Maximum shipping point price on No. 1 bundles (prime grade) in New York City is \$36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point. All New Jersey computations use all-rail transport. Cast scrap shipping point prices are given in table.

### CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 2 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles	\$8.00
No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap	6.00
Crushing machine shop turnings	3.00
Bar crops and plate, cast steel, punchings and plate, cut structural and plate; 3 ft and under, foundry steel, 2 ft and under, wrought iron	10.00
Structural, plate scrap, 3 ft and less, foundry steel 1 ft and less	11.00
Structural and plate scrap, 1 ft and less	12.00
Rails, 3 ft & less; cut tires; cut bolsters & side frames	4.00
Rails, 2 ft & less	5.00
Rails, 18 in. & less	7.00

### Hamilton, Ontario

(Consumers buying prices, del'd gross ton)

Hvy. melting steel	\$35.00
No. 1 bundles	35.00
No. 2 bundles	34.50
Mechanical bundles	33.00
Mixed, steel scrap	31.00
Rails, remelting	35.00
Rails, rerolling	33.00
Bushelings	30.00
Bushelings, prepared new factory	33.00
Bushelings, unprepared new factory	32.00
Short steel turnings	32.00
Mixed borings, turnings	32.00
Cast scrap	50.00

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Smith Tower

## LEADERS IN IRON AND STEEL SCRAP SINCE 1889

March 27, 1952



## Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel	Mar. 25, 1952	Mar. 18, 1952	Feb. 26, 1952	Mar. 27, 1951
(cents per pound)				
Hot-rolled sheets	3.60	3.60	3.60	3.60
Cold-rolled sheets	4.35	4.35	4.35	4.35
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.80
Hot-rolled strip	3.50	3.50	3.50	3.50
Cold-rolled strip	4.75	4.75	4.75	4.75
Plate	3.70	3.70	3.70	3.70
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	36.50

### Tin and Terneplate:

(dollars per base box)				
Tinplate (1.50 lb.) cokes	\$8.70	\$8.70	\$8.70	\$8.70
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	7.40
Special coated mfg. ternes	7.50	7.50	7.50	7.50

### Bars and Shapes:

(cents per pound)				
Merchant bars	3.70	3.70	3.70	3.70
Cold finished bars	4.55	4.55	4.55	4.55
Alloy bars	4.30	4.30	4.30	4.30
Structural shapes	3.65	3.65	3.65	3.65
Stainless bars (No. 302)	31.50	31.50	31.50	31.25
Wrought iron bars	9.50	9.50	9.50	9.50

### Wire

(cents per pound)				
Bright wire	4.85	4.85	4.85	4.85

### Rails

(dollars per 100 lb)				
Heavy rails	\$3.60	\$3.60	\$3.60	\$3.60
Light rails	4.00	4.00	4.00	4.00

### Semifinished Steel:

(dollars per net ton)				
Rerolling billets	\$56.00	\$56.00	\$56.00	\$56.00
Slabs, rerolling	56.00	56.00	56.00	56.00
Forging billets	66.00	66.00	66.00	66.00
Alloy blooms, billets, slabs	70.00	70.00	10.00	70.00

### Wire Rod and Skelp:

(cents per pound)				
Wire rods	4.10	4.10	4.10	4.10
Skelp	3.35	3.35	3.35	3.35

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron:	Mar. 25, 1952	Mar. 18, 1952	Feb. 26, 1952	Mar. 27, 1951
(per gross ton)				
Foundry, del'd Phila.	\$57.97	\$57.97	\$57.97	\$57.77
Foundry, Valley	52.50	52.50	52.50	52.50
Foundry, Southern, Cin'ti	55.58	55.58	55.58	55.58
Foundry, Birmingham	48.88	48.88	48.88	48.88
Foundry, Chicago†	52.50	52.50	52.50	52.50
Basic del'd Philadelphia	57.09	57.09	57.09	56.92
Basic, Valley furnace	52.00	52.00	52.00	52.00
Malleable, Chicago†	52.50	52.50	52.50	52.50
Malleable, Valley	52.50	52.50	52.50	52.50
Charcoal, Chicago	70.56	70.56	70.56	70.56
Ferromanganese†	186.25	186.25	186.25	186.25

†The switching charges for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy pages.

### Scrap:

(per gross ton)				
No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$44.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	42.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	40.00*
Low phos. Young'n	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	49.75†	49.75†	49.00†	49.00†
No. 1 cast, Philadelphia	50.25†	50.25†	49.00†	49.00†
No. 1 cast, Chicago	46.50†	48.00†	49.00†	40.00†

\* Basing Pt. † Shipping Pt. ‡ Del'd., includes broker's fee. Not including broker's fee after Feb. 7, 1951.

### Coke: Connellsville:

(per net ton at oven)				
Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry, coke, prompt	17.75	17.75	17.75	17.75

### Nonferrous Metals:

(cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin Straits, New York	\$1.215	\$1.215	\$1.215	\$1.34
Zinc, East St. Louis	19.50	19.50	19.50	17.50
Lead, St. Louis	18.80	18.80	18.80	16.80
Aluminum, virgin	19.00	19.00	19.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	53.55
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	50.00	50.00	50.00	42.00

[Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

## Composite Prices

### Finished Steel Base Price

Mar. 25, 1952	4.131¢ per lb.
One week ago	4.131¢ per lb.
One month ago	4.131¢ per lb.
One year ago	4.131¢ per lb.

	High	Low
1952....	4.131¢ Jan. 1	4.131¢ Jan. 1
1951....	4.131¢ Jan. 2	4.131¢ Jan. 2
1950....	4.131¢ Dec. 1	3.837¢ Jan. 3
1949....	3.837¢ Dec. 27	3.3705¢ May 3
1948....	3.721¢ July 27	3.193¢ Jan. 1
1947....	3.193¢ July 29	2.848¢ Jan. 1
1946....	2.848¢ Dec. 31	2.464¢ Jan. 1
1945....	2.464¢ May 29	2.396¢ Jan. 1
1944....	2.396¢	2.396¢
1943....	2.396¢	2.396¢
1942....	2.396¢	2.396¢
1941....	2.396¢	2.396¢
1940....	2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939....	2.35367¢ Jan. 3	2.27207¢ May 16
1938....	2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937....	2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936....	2.32263¢ Dec. 28	2.05200¢ Mar. 10
1929....	2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

### Pig Iron

.....\$52.72 per gross ton....
.... 52.72 per gross ton....
.... 52.72 per gross ton....
.... 52.69 per gross ton....

High	Low
\$52.72 Jan. 1	\$52.72 Jan. 1
52.72 Oct. 9	52.69 Jan. 2
52.69 Dec. 12	45.88 Jan. 3
46.87 Jan. 18	45.88 Sept. 6
46.91 Oct. 12	39.58 Jan. 6
37.98 Dec. 30	30.14 Jan. 7
30.14 Dec. 10	25.37 Jan. 1
25.37 Oct. 23	23.61 Jan. 2
23.61	23.61
23.61	23.61
23.61	23.61
\$23.61 Mar. 20	\$23.45 Jan. 2
23.45 Dec. 23	22.61 Jan. 2
22.61 Sept. 19	20.61 Sept. 12
23.25 June 21	19.61 July 6
32.25 Mar. 9	20.25 Feb. 16
19.74 Nov. 24	18.73 Aug. 11
18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

### Scrap Steel

.....\$42.00 per gross ton....
.... 42.00 per gross ton....
.... 42.00 per gross ton....
.... 43.00 per gross ton....

High	Low
\$42.00 Jan. 1	\$42.00 Jan. 1
47.75 Jan. 30	42.00 Oct. 23
45.13 Dec. 19	26.25 Jan. 3
43.00 Jan. 4	19.33 June 28
43.16 July 27	39.75 Mar. 9
42.58 Oct. 28	29.50 May 20
31.17 Dec. 24	19.17 Jan. 1
19.17 Jan. 2	18.92 May 22
19.17 Jan. 11	15.76 Oct. 24
\$19.17	\$19.17
19.17	19.17
\$22.00 Jan. 7	18.92 May 22
21.83 Dec. 30	16.04 Apr. 9
22.50 Oct. 3	14.08 May 16
15.00 Nov. 22	11.00 June 7
21.92 Mar. 30	12.67 June 9
17.75 Dec. 21	12.67 June 8
17.58 Jan. 29	14.08 Dec. 8

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

# For High Density Bales... Use Self-Contained **LOGEMANN Scrap Presses**

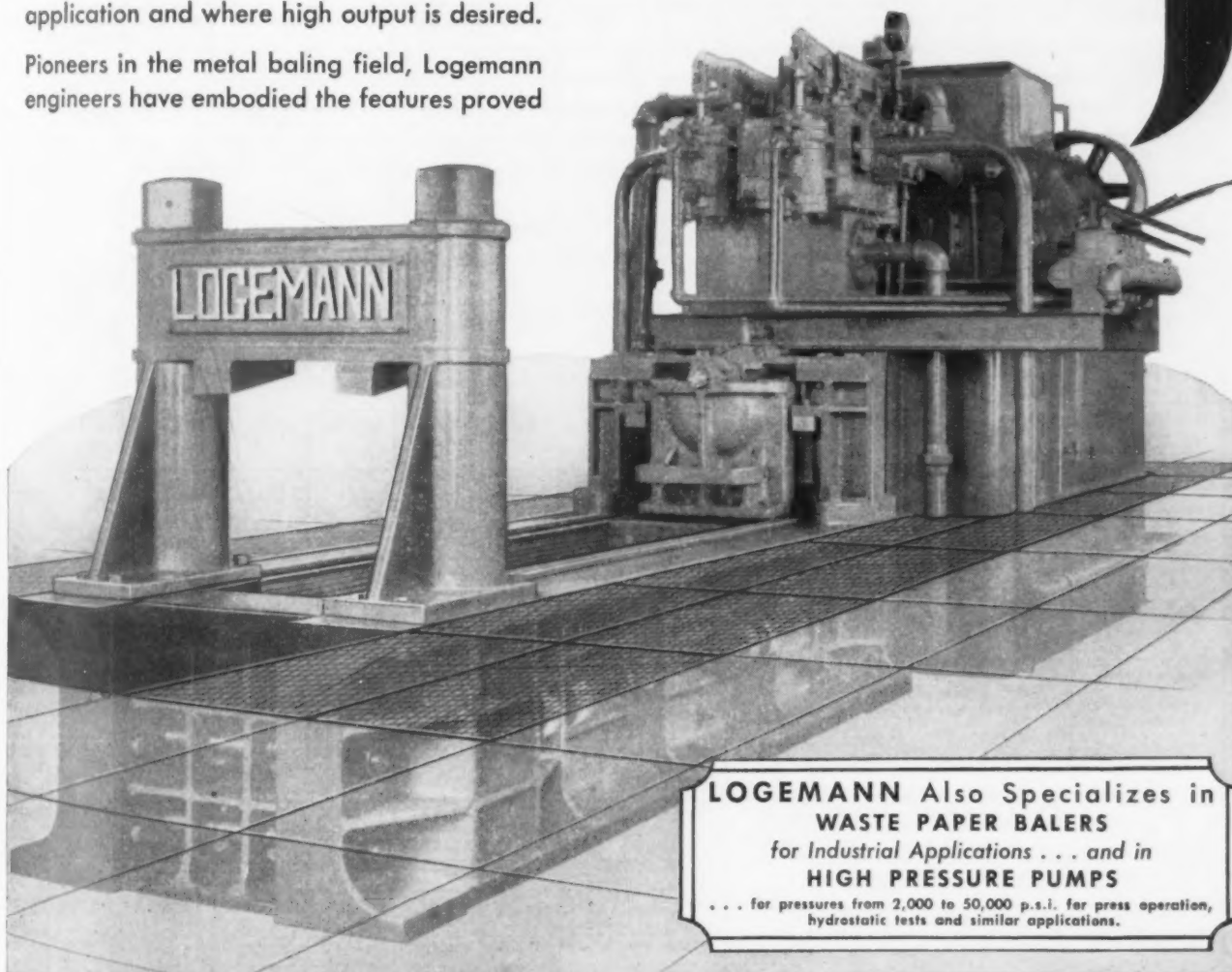
## **Press, Pump, Tank... All in One Compact Assembly**

Where space is limited, plants and mills can conserve floor space and piping, and at the same time handle high tonnages at low operating cost with a Logemann Scrap Press.

Both two and three ram models are available with automatic controls and are recommended when the nature of the scrap warrants such application and where high output is desired.

Pioneers in the metal baling field, Logemann engineers have embodied the features proved

through actual operation to be essential to constant, uninterrupted service. Logemann engineers are prepared to offer suggestions as to operating layout and installation of any unusual or specific need. Present your problem to them, stating the nature of your scrap and the tonnage desired. There is no obligation.



**LOGEMANN Also Specializes in  
WASTE PAPER BALERS**  
for Industrial Applications . . . and in  
**HIGH PRESSURE PUMPS**

. . . for pressures from 2,000 to 50,000 p.s.i. for press operation,  
hydrostatic tests and similar applications.

# **LOGEMANN BROTHERS CO.**

3200 W. BURLEIGH STREET • MILWAUKEE 10, WISCONSIN

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.													
STEEL PRICES	INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL-ING	SHAPES, STRUCTURAL		STRIP					
	Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Steel Sheet	Carbon	Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy		
EAST	Bethlehem, Pa.				\$70.00 B3			3.70 B3	5.50 B3						
	Buffalo, N. Y.			\$56.00 B3	\$66.00 B3, R3	\$70.00 B3, R3	4.45 B3	3.70 B3	5.50 B3	3.50 B3, R3	4.65 B3	4.95 B3	6.40 B3		
	Claymont, Del.														
	Coatesville, Pa.														
	Conschocken, Pa.				\$73.00 A2	\$77.00 A2				3.90 A2		5.55 A2			
	Harrisburg, Pa.														
	Hartford, Conn.														
	Johnstown, Pa.			\$56.00 B3	\$66.00 B3	\$70.00 B3		3.70 B3	5.50 B3	3.50 B3					
	Newark, N. J.														
	New Haven, Conn.										5.15 A5 5.85 D1				
	Phoenixville, Pa.							5.90 P2							
	Putnam, Conn.														
	Sparrows Pt., Md.									3.50 B3	4.65 B3	4.95 A5, B3	6.40 B3		
	Worcester, Mass.														
Trenton, N. J.											6.00 R4				
MIDDLE WEST	Alton, Ill.									3.95 L1					
	Ashland, Ky.									3.50 A7					
	Canton-Massillon				\$66.00 R3,	\$70.00 R3 \$66.00 T3									
	Chicago, Ill.			\$56.00 U1	\$66.00 U1, R3, W8	\$70.00 U1, R3, W8	4.45 U1	3.65 U1, W8	5.50 U1	3.50 A1, W8	4.90 A1, I3				
	Cleveland, Ohio				\$66.00 R3						4.65 A5, J3		6.55 A1 6.70 J3		
	Detroit, Mich.		\$54.00 R5		\$69.00 R5	\$73.00 R5				4.40 M2 3.80 C4	4.85 C4 5.45 M2 5.60 R5, D1	5.95 C4			
	Duluth, Minn.														
	Gary, Ind. Harbor, Indiana			\$56.00 U1	\$66.00 U1	\$70.00 U1, Y1	4.45 I3	3.65 U1, I3	5.50 U1, I3 6.00 Y1	3.50 U1, Y1, I3	4.90 I3	5.30 U1, I3 5.80 Y1			
	Granite City, Ill.														
	Kokomo, Ind.														
	Middletown, Ohio									3.50 A7	4.65 A7				
	Niles, Ohio Sharon, Pa.									4.00 S1	5.35 S1	5.40 S1	6.55 S1		
	Pittsburgh, Pa.	\$52.00 U1	\$54.00 U1, C11	\$56.00 U1	\$66.00 U1	\$70.00 U1, C11	3.35 U1 3.45 J3	4.45 U1	3.65 U1, J3	5.50 U1, J3	4.00 S9, S7 3.75 A3 3.50 J3, A7	4.65 J3, A7 5.00 A3 5.35 B4, S7			
	Portsmouth, Ohio														
Weirton, Wheeling, Follansbee, W. Va.								3.90 W3		3.60 W3	4.65 W3 5.35 F3	5.75 W3	7.20 W3		
Youngstown, Ohio					\$70.00 Y1 C10	3.35 U1, R3			6.00 Y1	3.50 U1, R3, Y1	4.65 R3, Y1 5.25 C5, T4 5.35 B4	5.30 U1, R3 5.80 Y1	6.55 R3 7.05 Y1		
WEST	Fentana, Cal.	\$79.00 K1	\$80.00 K1	\$75.00 K1	\$85.00 K1	\$89.00 K1			4.25 K1	6.10 K1	4.75 K1	6.30 K1	6.20 K1	6.95 K1	
	Geneva, Utah				\$66.00 G1				3.65 G1	5.50 G1					
	Kansas City, Mo.								4.25 S2		4.10 S2				
	Los Angeles, Calif.				\$85.00 B2	\$90.00 B2			4.25 B2, C7	6.05 B2	4.25 B2, C7	6.40 C1	6.05 B2		
	Minnequa, Colo.								4.10 C6		4.55 C6				
	San Francisco, Cal.				\$85.00 B2				4.20 B2	6.00 B2	4.25 C7, B2		6.05 B2		
	Seattle, Wash.				\$85.00 B2				4.30 B2	6.10 B2	4.50 B2		6.30 B2		
SOUTH	Atlanta, Ga.										4.05 A8				
	Birmingham, Ala.			\$56.00 T2	\$66.00 T2				\$3.60 R3 3.65 T2	5.50 T2	3.50 R3, T2		5.30 T2		
	Houston, Texas		\$62.00 S2		\$74.00 S2	\$78.00 S2			4.05 S2		3.90 S2				



*Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.*

SHEETS										WIRE ROD	TINPLATE†		BLACK PLATE	IRON AGE STEEL PRICES
Hot-rolled 18 ga. 1/2 byr.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Tern 10 ga.	Hi. Str. Low Alloy H.R.	Hi. Str. Low Alloy C.R.	Hi. Str. Low Alloy Galv.	Hot- rolled 19 ga.			Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.	
1.60 B3	4.35 B3				5.40 B3	6.55 B3			4.10 W6					Bethlehem, Pa.
														Buffalo, N. Y.
														Claymont, Del.
														Coatesville, Pa.
4.00 A2					5.65 A2									Conschocken, Pa.
														Harrisburg, Pa.
														Hartford, Conn.
									4.10 B3					Johnstown, Pa.
														Newark, N. J.
														New Haven, Conn.
														Phoenixville, Pa.
														Putnam, Conn.
3.60 B3	4.35 B3	4.80 B3			5.40 B3	6.55 B3	6.75 B3		4.20 B3		\$8.55 B3	\$7.25 B3		Sparrows Pt., Md.
									4.40 A5					Worcester, Mass.
									4.20 R4					Trenton, N. J.
									4.40 L1					Alton, Ill.
3.60 A7		4.80 A7	4.65 A7											Ashland, Ky.
		4.80 R3												Canton-Massillon
3.60 W8					5.40 U1				4.10 A5,R3, N4					Chicago, Ill.
3.60 R3,J3	4.35 R3,J3		4.65 R3		5.40 R3,J3	6.55 R3,J3			4.10 A5			\$7.15 R3		Cleveland, Ohio
3.80 G4 4.40 M2	4.55 G4				5.95 G4	7.10 G4								Detroit, Mich.
														Duluth, Minn.
3.60 U1, Y1,I3	4.35 U1, Y1,I3	4.80 U1,I3	4.65 U1,I3	5.20 U1	5.40 U1,I3 5.90 Y1	6.55 U1,I3 7.05 Y1		5.40 I3	4.10 Y1		\$8.45 B3, U1,Y1	\$7.15 U1,I3	5.85 U1 5.30 Y1	Gary, Ind. Harbor, Indiana
4.30 G3	5.05 G3	5.50 G3	5.35 G3									\$7.35 G3	6.05 G3	Granite City, Ill.
		5.20 C9												Kokomo, Ind.
3.60 A7	4.35 A7	4.80 A7	4.65 A7	5.20 A7										Middletown, Ohio
5.25 N3 4.00 S1		6.00 N3		6.00 N3	5.40 S1									Niles, Ohio; Sharon, Pa.
3.60 U1, J3,A7 3.75 A3	4.35 U1, J3,A7	4.80 U1	4.65 U1		5.40 U1,J3	6.55 U1,J3	7.20 U1		4.10 A5 4.30 P6		\$8.45 U1,J3	\$7.15 U1,J3	5.85 U1	Pittsburgh, Pa.
									4.30 P7					Portsmouth, Ohio
3.60 W3,W5	5.35 F3 4.35 W3,W5	4.80 W3,W5		5.20 W3,W5	5.75 W3	6.90 W3					\$8.45 W3,W5	\$7.15 W3,W5	6.15 W5 5.85 F3	Weirton, Wheeling, Follansbee, W. Va.
3.60 U1, R3,Y1	4.35 R3, Y1	5.50 R1	4.65 Y1	6.05 E2	5.40 U1,R3 5.90 Y1	6.55 R3 7.05 Y1		6.05 R1,E2	4.10 Y1		\$8.45 R3		5.30 R3	Youngstown, Ohio
4.55 K1	5.30 K1				6.35 K1	7.50 K1			4.90 K1					Fontana, Cal.
3.70 G1														Geneva, Utah
														Kansas City, Mo.
4.30 C7		5.55 C7						5.40 C7	4.90 B2,C7		\$9.20 C7	\$7.90 C7		Los Angeles, Cal.
									4.35 C6					Minnequa, Colo.
4.30 C7	5.30 C7	5.55 C7							4.90 A5					San Francisco, Cal.
														Seattle, Wash.
														Atlanta, Ga.
3.60 R3,T2	4.35 T2	4.80 R3,T2			5.40 T2			4.75 R3	4.10 R3,T2		\$8.55 T2	\$7.25 T2		Birmingham, Ala.
									4.50 S2					Houston, Texas

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.										
STEEL PRICES		BARS					PLATES				WIRE	
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				4.30 B3	5.40 B3	5.55 B3					
	Buffalo, N. Y.	3.70 B3,R3	3.70 B3,R3	4.60 B5	4.30 B3,R3	5.40 B3	5.55 B3	3.70 B3				4.85 W6
	Claymont, Del.							4.15 C4		4.85 C4		
	Coatesville, Pa.							4.15 L4		5.25 L4		
	Conshohocken, Pa.							4.15 A2	4.75 A2	5.05 A2	5.90 A2	
	Harrisburg, Pa.							6.30 C3	6.30 C3			
	Hartford, Conn.			5.10 R3		5.85 R3						
	Johnstown, Pa.	3.70 B3	3.70 B3		4.30 B3		5.55 B3	3.70 B3		4.75 B3	5.65 B3	4.85 B3
	Newark, N. J.			5.00 W10		5.75 W10						
	New Haven, Conn.											
	Phoenixville, Pa.											
	Putnam, Conn.			5.10 W10								
	Sparrows Point, Md.		3.70 B3					3.70 B3		4.75 B3	5.65 B3	4.95 B3
	Worcester, Mass.			5.10 B5		5.75 A5						5.15 A5,W6
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.	4.15 L1										5.05 L1
	Ashland, Ky.							3.70 A7				
	Canton-Massillon	3.70 R3		4.55 R3,R2	3.95 T5 4.30 R3	4.90 T5 5.40 R3,R2						
	Chicago, Ill.	3.70 U1,R3, W8	3.70 R3	4.55 A5,B5, W8	4.30 U1,R3, W8	5.40 R3,W8, W10,B5,L2 5.45 A5		3.70 U1,W8	4.75 U1	4.75 U1	5.65 U1	5.10 W7 4.85 R3,A5, K2,N4
	Cleveland, Ohio	3.70 R3	3.70 R3	4.55 A5,C13		5.45 A5	5.55 R3,J3	3.70 R3,J3	4.75 J3		5.65 R3,J3	4.85 A5,C13
	Detroit, Mich.	3.85 R5		4.70 P8 4.80 P3	4.45 R5 4.65 G4	5.55 P8 5.60 P3						
	Duluth, Minn.											4.85 A5
	Gary, Ind. Harbor, Indiana	3.70 U1,R3, Y1,I3	3.70 U1,I3, Y1	4.55 R3,M5, L2	4.30 U1,I3, Y1	5.40 R3,M5, L2	5.55 U1,I3, 6.05 Y1	3.70 U1,I3, Y1	4.75 I3	4.75 U1	5.65 U1,I3 6.15 Y1	5.10 M4
	Granite City, Ill.							4.40 G4				
	Kokomo, Ind.											4.95 C9
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							3.95 S1		5.20 S1	5.70 S1	
	Pittsburgh, Pa.	3.70 U1,J3	3.70 U1,J3	4.55 R3,A5, J3,S8,W10, C8	4.30 U1,C11	5.40 C11,S8, W10,C8,A5	5.55 U1,J3	3.70 U1,J3	4.75 U1	4.75 U1	5.65 U1,J3	4.85 A5,J3 5.10 P6
	Portsmouth, Ohio											5.25 P7
	Weirton, Wheeling, Follansbee, W. Va.	3.85 W3						4.00 W3,W5				
Youngstown, Ohio	3.70 U1,R3, Y1	3.70 U1,R3, Y1	4.55 Y1,F2	4.30 U1,Y1, C10	5.40 Y1,C10, F2	5.55 U1 6.05 Y1	3.70 U1,R3, Y1			5.65 R3 6.15 Y1	4.85 Y1	
WEST	Fontana, Cal.	4.40 K1	4.40 K1		5.35 K1		6.60 K1	4.30 K1		5.70 K1	6.25 K1	
	Geneva, Utah							3.70 G1			5.65 G1	
	Kansas City, Mo.	4.30 S2	4.30 S2		4.90 S2							5.45 S2
	Los Angeles, Cal.	4.40 C7,B2	4.40 C7,B2	6.00 B2,R3	5.35 B2		6.25 B2					5.80 C7
	Minnequa, Colo.	4.15 C6	4.50 C6					4.50 C6				5.10 C6
	San Francisco, Cal.	4.45 B2 4.40 C7	4.45 B2,C7				6.30 B2					5.80 C7
	Seattle, Wash.	4.45 B2	4.45 B2				6.30 B2	4.60 B2			6.55 B2	
	Atlanta, Ga.	4.25 A8	4.25 A8									5.10 A8
SOUTH	Birmingham, Ala.	3.70 R3,T2	3.70 R3,T2				5.55 T2	3.70 R3,T2			5.65 T2	4.85 R3,T2
	Houston, Tex.	4.10 S2	4.10 S2		4.70 S2			4.10 S2				5.25 S2

## Key to Steel Producers

With Principal Offices

A1	Acme Steel Co., Chicago
A2	Alan Wood Steel Co., Conshohocken, Pa.
A3	Allegheny Ludlum Steel Corp., Pittsburgh
A4	American Cladmetals Co., Carnegie, Pa.
A5	American Steel & Wire Div., Cleveland
A6	Angell Nail & Chaplet Co., Cleveland
A7	Armco Steel Corp., Middletown, O.
A8	Atlantic Steel Co., Atlanta, Ga.
B1	Babcock & Wilcox Tube Co., Beaver Falls, Pa.
B2	Bethlehem Pacific Coast Steel Corp., San Francisco
B3	Bethlehem Steel Co., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
C1	California Cold Rolled Steel Corp., Los Angeles
C2	Carpenter Steel Co., Reading, Pa.
C3	Central Iron & Steel Co., Harrisburg, Pa.
C4	Claymont Steel Corp., Claymont, Del.
C5	Cold Metal Products Co., Youngstown
C6	Colorado Fuel & Iron Corp., Denver
C7	Columbia-Geneva Steel Co., San Francisco
C8	Columbia Steel & Shifting Co., Pittsburgh
C9	Continental Steel Corp., Kokomo, Ind.
C10	Copperweld Steel Co., Glassport, Pa.
C11	Crucible Steel Co. of America, New York
C12	Cumberland Steel Co., Cumberland, Md.
C13	Cuyahoga Steel & Wire Co., Cleveland
D1	Detroit Steel Corp., Detroit
D2	Detroit Tube & Steel Div., Detroit
D3	Driver Harris Co., Harrison, N. J.
E1	Eastern Stainless Steel Corp., Baltimore
E2	Empire Steel Co., Mansfield, O.
F1	Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
F2	Fitzsimmons Steel Corp., Youngstown
F3	Follansbee Steel Corp., Follansbee, W. Va.
G1	Geneva Steel Co., Salt Lake City
G2	Globe Iron Co., Jackson, O.
G3	Granite City Steel Co., Granite City, Ill.
G4	Great Lakes Steel Corp., Detroit
H1	Hanna Furnace Corp., Detroit
I1	Ingersoll Steel Div., Chicago
I2	Inland Steel Co., Chicago
I4	Interlake Iron Corp., Cleveland
J1	Jackson Iron & Steel Co., Jackson, O.
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
K1	Kaiser Corp., Oakland, Cal.
K2	Keystone Steel & Wire Co., Peoria
K3	Koppers Co., Granite City, Ill.
L1	Laclede Steel Co., St. Louis
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
M1	Mahoning Valley Steel Co., Niles, O.
M2	McLouth Steel Corp., Detroit
M3	Mercer Tube & Mfg. Co., Sharon, Pa.
M4	Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5	Monarch Steel Co., Inc., Hammond, Ind.
M6	Mystic Iron Works, Everett, Mass.
N1	National Supply Co., Pittsburgh
N2	National Tube Co., Pittsburgh
N3	Niles Rolling Mills Co., Niles, O.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
O1	Oliver Iron & Steel Co., Pittsburgh
P1	Page Steel & Wire Div., Monessen, Pa.
P2	Phoenix Iron & Steel Co., Phoenixville, Pa.
P3	Pilgrim Drawn Steel Div., Plymouth, Mich.
P4	Pittsburgh Coke & Chemical Co., Pittsburgh
P5	Pittsburgh Screw & Bolt Co., Pittsburgh
P6	Pittsburgh Steel Co., Pittsburgh
P7	Portsmouth Div., Detroit Steel Corp., Detroit
P8	Plymouth Steel Co., Detroit
R1	Reeves Steel & Mfg. Co., Dover, O.
R2	Reliance Div., Easton Mfg. Co., Massillon, O.
R3	Republic Steel Corp., Cleveland
R4	Roebing Sons Co. (John A.), Trenton, N. J.
R5	Rotary Electric Steel Co., Detroit
S1	Sharon Steel Corp., Sharon, Pa.
S2	Sheffield Steel Corp., Kansas City
S3	Shenango Furnace Co., Pittsburgh
S4	Simonds Saw & Steel Co., Fitchburg, Mass.
S5	Sloss Sheffield Steel & Iron Co., Birmingham
S6	Standard Forging Corp., Chicago
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S9	Superior Steel Corp., Carnegie, Pa.
S10	Sweet's Steel Co., Williamsport, Pa.
T1	Tonawanda Iron Div., N. Tonawanda, N. Y.
T2	Tennessee Coal, Iron & R. R. Co., Birmingham
T3	Tennessee Products & Chem. Corp., Nashville
T4	Thomas Steel Co., Warren, O.
T5	Timken Steel & Tube Div., Canton, O.
T6	Tremont Nail Co., Wareham, Mass.
U1	United States Steel Co., Pittsburgh
U2	Universal Cyclops Steel Corp., Bridgeville, Pa.
W1	Wallingford Steel Co., Wallingford, Conn.
W2	Washington Steel Corp., Washington, Pa.
W3	Weirton Steel Co., Weirton, W. Va.
W4	Wheatland Tube Co., Wheatland, Pa.
W5	Wheeling Steel Corp., Wheeling, W. Va.
W6	Wickwire Spencer Steel Co., Buffalo
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Co., S. Chicago, Ill.
W9	Woodward Iron Co., Woodward, Ala.
W10	Wyckoff Steel Co., Pittsburgh
Y1	Youngstown Sheet & Tube Co., Youngstown

## Steel Prices

Base price, f.a.b., dollars per 100 lb. \* (Metropolitan area delivery add 20¢ except S'ham, San Fran., Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Phila., add 25¢; N. Y., add 30¢.)

### WARE-HOUSES

Cities	Sheets			Strip		Plates		Shapes		Bars		Alloy Bars			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled	Standard Structural	Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed		
Baltimore	5.60	6.84	7.49 <sup>2</sup>	6.04		5.80	6.14	6.04	6.84	10.24	10.54	11.89	12.19		
Birmingham*	5.60	6.40	6.75	5.55		5.95	5.70	5.55	6.89						
Boston	6.20	7.00	7.74	6.15	8.50 <sup>4</sup>	6.48	6.20	6.05	6.79	10.25	10.55	11.90	12.20		
Buffalo	5.60	6.40	7.74	5.86		6.78	5.80	5.60	6.84	10.15	10.45	11.80	12.30		
Chicago	5.60	6.40	7.75	5.55		6.05	5.70	5.55	6.40	10.15	10.45	11.80	12.10		
Cincinnati*	5.87	6.44	7.39	5.80		6.19	6.09	5.80	6.30	9.80	10.10	11.45	11.75		
Cleveland	5.60	6.40	8.10	5.69	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.56	11.86		
Detroit	5.78	6.53	7.89	5.94		5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06		
Houston	7.00	8.25				6.85	6.50	6.65	9.35	10.35	11.25		12.75		
Indianapolis, del'd	6.00	6.80	8.15	5.95		6.20	6.10	5.95	6.80						
Kansas City	6.00	6.80	7.45	6.15	7.50	6.40	6.30	6.15	7.00	10.40	10.70	12.05	12.35		
Los Angeles	6.35	7.90	8.85	6.40	9.45 <sup>6</sup>	6.40	6.35	6.35	8.20	11.30	11.30	13.20	13.50		
Memphis*	6.33	7.00		6.33		6.43	6.33	6.08	7.16						
Milwaukee	6.38	7.18		6.38		8.02	6.48	6.33	7.32						
New Orleans*	5.74	6.54	7.89	5.69		5.94	5.84	5.69	6.44	9.94	10.24	11.59	11.89		
New York*	5.70	6.59		5.75	7.25	5.95	5.75	5.75	7.30						
Portland	5.67	7.19 <sup>3</sup>	8.14 <sup>3</sup>	6.29	8.63 <sup>4</sup>	6.28	6.10	6.12	6.99	10.05	10.35	11.70	12.10		
Philadelphia*	5.97	7.24 <sup>1</sup>		6.89		6.58				10.15	10.45	11.80	12.20		
Pittsburgh	5.90	6.80	8.00	6.10		6.50 <sup>3</sup>	6.60 <sup>3</sup>	6.55 <sup>3</sup>							
Portland	5.90	6.80	8.00	6.10		6.05	5.90	6.05	6.86	9.90	10.20				
Salt Lake City	5.60	6.40	7.75	5.65		5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75		
San Francisco*	6.60	8.95	8.50	7.30		6.80	6.95	6.90							
Seattle	7.55		9.10												
St. Louis	7.95		9.70	8.70		8.05	6.75	7.95	9.00						
St. Paul*	6.65	7.70	8.55	6.44	9.95 <sup>6</sup>	6.40	6.45	6.40	8.20	11.30	11.20	13.20	13.50		
	6.79	7.88 <sup>2</sup>	9.25 <sup>3</sup>	6.60		6.49	6.64	6.45	8.21						
	7.05	8.60	9.20	9.05		6.75	6.65	6.75	9.05						
	5.80	6.65	8.00	5.80	8.00 <sup>4</sup>	6.13	6.03	5.80	6.55	10.05	10.35	11.70	12.00		
	5.85			8.28					6.65						
	6.16	6.96	8.31	6.11		6.36	6.26	6.11	6.96	10.36	10.66	12.01	12.31		

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanizing sheets, for quantity.  
EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2000 to 5999 lb.

### STAINLESS STEELS

Base price, cents per lb. f.a.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingot rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs billets rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs die blocks rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars wires structural	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2; (type 316 add 4.5¢) J2; Baltimore, Md., E1; Middletown, O., A7; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., J2; Ft. Wayne, Ind., J4; Lockport, N. Y., R4.  
Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; (type 316 add 4.5¢) W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, Md., C2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, O., S7; Lockport, N. Y., S4; New Britain, Conn., S7; Sharon, Pa., S1 (type 301 add 1.4¢); Butler, Pa., A7; Wallingford, Conn., W1.  
Bars: Baltimore, Md., A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1; F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, Ill., Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, Ind., A5; Lockport, N. Y., S4; Canton, O., T5; Ft. Wayne, Ind., J4.  
Wire: Waukegan, Ind., A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind., J4; Trenton, N. J., R4; Harrison, N. J., D3; Baltimore, Md., A7; Dunkirk, N. Y., S4; Monessen, Pa., S1; Syracuse, N. Y., C11; Bridgeville, Pa., U2.  
Structurals: Baltimore, Md., A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, N. Y., C11.  
Plates: Brackenridge, Pa., A3 (type 416 add 1.5¢); Butler, Pa., A7; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., J2; Lockport, N. Y., S4; Middletown, O., A7; Washington, Pa., J2; Cleveland, Massillon, R3.  
Forged discs, die blocks, rings: Pittsburgh, Pa., C11; Syracuse, N. Y., C11; Ferndale, Mich., A3; Washington, Pa., J2.  
Forging billets: Midland, Pa., C11; Baltimore, Md., A7; Washington, Pa., J2; McKeesport, Pa., F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.  
ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.  
WASHINGTON STEEL—Slightly lower on 300 series except where noted.



# Miscellaneous Prices

## PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD										SEAMLESS									
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2 In.		4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
<b>STANDARD</b>																				
T. & C.																				
Sparrows Pt. B3.	34.0	12.0	37.0	16.0	39.0	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0						
Cleveland R3.	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0						
Oakland K1.	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0						
Pittsburgh J3.	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	13.5
Pittsburgh J2.	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
Alton, Ill. L1.	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0						
Sharon M3.	36.0	13.0	39.0	17.0	41.5	21.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0						
Pittsburgh N1.	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5		32.5		34.5	
Wheeling W5.	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0						
Wheeland W4.	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5						
Youngstown Y1.	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
<b>EXTRA STRONG.</b>																				
<b>PLAIN ENDS</b>																				
Sparrows Pt. B3.	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0						
Cleveland R3.	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0						
Oakland K1.	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0						
Pittsburgh J3.	35.5	13.0	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.5	15.5
Pittsburgh J2.	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.5
Alton, Ill. L1.	32.5	12.0	36.5	16.0	38.5	19.5	39.0	20.0	39.5	21.0	40.0	21.5	40.5	22.0						
Sharon M3.	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0						
Pittsburgh N1.	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0		33.0		36.5	
Wheeling W5.	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0						
Wheeland W4.	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5						
Youngstown Y1.	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	26.0	29.0	10.0	33.0	14.0	36.5	17.5

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1/4 pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.5¢ to 17.5¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only, butt weld and seamless, 1 pt. higher discount. Plain ends, butt weld and seamless, 3 in. and under, 3/4 pt. higher discount. Butt weld jobbers' discount, 5 pt. East St. Louis zinc price now 19.5¢.

## COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa. ....	\$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa. ....	\$17.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$26.69
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Palmer, Ohio, f.o.b.	21.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

## ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill							
Cents Per Lb.							
Bech Bottom W3.	7.25	8.5¢	9.3¢	9.85	10.40	11.10	
Brackenridge A3.	7.25	8.5¢	9.3¢	9.85	10.40	11.10	
Follansbee F3.	6.75	7.25	8.5¢	9.30	9.85	10.40	11.10
Granite City C3.	7.95	9.20					
Ind. Harbor B3.	6.75	7.25					
Mansfield E2.	7.25	7.75	9.0¢	9.80			
Niles, O. N3.	7.05	7.55					
Vandergrift U1.	6.75	7.25	8.5¢	9.3¢	9.85	10.40	11.10
Warren, O. R3.	6.75	7.25	8.5¢	9.3¢	9.85	10.40	11.10
Zanesville A7.	6.75	7.25	8.5¢	9.30	9.85	10.40	11.10

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem B3.	54.00	54.50	55.00	55.50			
Birmingham B3.	48.38	48.88					
Birmingham W9.	48.38	48.88					
Birmingham S5.	48.38	48.88					
Buffalo R3.	52.00	52.50	53.00				
Buffalo H1.	52.00	52.50	53.00			63.75	
Chicago I4.	52.00	52.50	53.00				
Cleveland A5.	52.00	52.50	53.00		57.00		
Cleveland R3.	52.00	52.50	53.00				
Danversfield, Tex. L3.	48.00	48.50	48.50				
Duluth I4.	52.00	52.50	53.00				
Erie I4.	52.00	52.50	53.00				
Everett, Mass. M6.		57.50	58.00				
Fontana K1.	58.00	58.50					
Geneva, Utah U1, Y1.	52.00	52.50	53.00				
Granite City, Ill. K3.	53.90	54.40	54.90				
Hubbard, Ohio Y1.	52.00	52.50	53.00				
Ironton, Utah C7.	52.00	52.50					
Jackson, Ohio J1, G2.						62.50	
Lyle, Tenn. T3.							66.00
Monessen P6.	54.00						
Neville Island P4.	52.00	52.50	53.00				
Pittsburgh U1.	52.00			53.00			
Sharpsville S3.	54.00	54.50	55.00	55.50	60.00		
Swedeland A2.	56.00	56.50	57.00	57.50			
Toledo I4.	52.00	52.50	53.00				
Troy, N. Y. R3.	54.00	54.50	55.00		60.00		
Youngstown Y1.	52.00	52.50	53.00				
N. Tonawanda, N. Y. T1.		52.50					

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add \$1.50 per net ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferroal on prices are \$1 over comparable silvery iron.

## BOILER TUBES

Per 100 ft. cut, 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	R.W. Ga.	H.R.	C.D.	H.R.	C.D.
<b>Babcock &amp; Wilcox</b>						
2 1/2	13	22.67	26.66	21.99	25.86	
3	12	39.48	35.84	29.57	34.76	
3 1/2	11	32.30	39.90	32.80	38.70	
4	10	42.37	49.89	41.10	48.39	
		52.60	61.88	51.03	60.82	
<b>National Tube</b>						
2 1/2	13	21.62	26.48			
3	12	29.65	36.32			
3 1/2	12	34.00	41.64			
4	11	40.34	49.41			
	10	51.21	62.72			
<b>Pittsburgh Steel</b>						
2 1/2	13		27.08			
3	12	30.49	37.15			
3 1/2	12	34.95	42.59			
4	11	41.48	50.54			
	10	52.65	64.16			

## CAST IRON WATER PIPE

Per Net Ton  
6 to 24-in., del'd Chicago \$105.30 to \$108.80  
6 to 24-in., del'd N.Y. 108.50 to 109.50  
6 to 24-in., Birmingham \$150 to \$160.00  
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipment less ..... \$123.00 to \$130.00  
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

## C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S7.	5.35	6.80	7.40	9.35	11.45
Carnegie, Pa. S9.		6.80	7.40	9.35	11.45
Cleveland A5.	4.65	6.45	7.40	9.35	11.45
Detroit D1.	5.60	6.65	7.25		
New Castle, Pa. B4.	5.35	6.80	7.40	9.3	
New Haven, Conn. D1.	5.85	6.75	7.35		
Sharon, Pa. S7.	5.35	6.80	7.40	9.35	11.45
Weirton, W. Va. W3.	5.35	6.80	7.40	9.35	11.45
Worcester, Mass. A5.	4.95	6.75	7.70	9.65	11.45
Youngstown C5.		6.80	7.40	9.35	11.45

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Case Nails		Woven Wire Fence 9-15 ft. ga.		Fence Posts		Single Loop Barbed Wire		Twisted Barbed Wire		Gal. Barbed Wire		Merch. Wire And Gal. Wire	
	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	
Alabama City R3	118	126			123								136 5.70 5.95	
Aliquippa, Pa. J3	118	132											140 5.70 6.15	
Atlanta A6	121	133			126	126	143						136 5.70 6.15	
Bartonsville K2	118	130			123	143							143 5.70 6.15	
Buffalo W6													4.85	
Cleveland A6	125												5.70 6.15	
Cleveland A5													5.70 6.15	
Crawfordsville M4		132											5.70 6.15	
Danora, Pa. A5	118	130			123	140							140 5.70 6.15	
Duluth A5	118	130			123	140							140 5.70 6.15	
Fairfield, Ala. T2	118	130			123								140 5.70 6.15	
Houston S2	126	138											148 6.10 6.55	
Johnston, Pa. B3	118	130				140							5.70 6.15	
Joliet, Ill. A5	118	130			123								140 6.70 6.15	
Kokomo, Ind. C9	120	132			125	138							142 5.80 6.05	
Kokomo, Ind. C9													6.65	
Los Angeles R2					135								152 6.35 6.75	
Kansas City S2	130												146 5.95 6.45	
Minnecon C6	123	138	130		128	146							148 5.95 6.45	
Monessen P6	124	135											145 5.95 6.40	
Moline, Ill. R3					136									
Pittsburg, Cal. C7	137				147	156	160	6.65 6.80						
Portsmouth P7	124	137				147	147	6.10 6.60						
Rankin, Pa. A5	118	130				140	140	5.70 6.15						
So. Chicago R3	118	126	140		123		136	5.70 5.95						
S. San Fran. C6						147	160	6.25 7.10						
Sparrows Pt. B3	120				125	142	142	5.80 6.25						
Sterling, Ill. N4	118	130			123	140	140	5.70 6.15						
Struthers, O. Y1								6.70 6.15						
Torrance, Cal. C7	138							6.65						
Worcester A5	124							6.00 6.45						
Williamsport, Pa. S10					150									

## Miscellaneous Prices

### RAILS, TRACK SUPPLIES

Fab. Mill Cents Per Lb.	No. 1 Std. Rail	Light Rail	Joint Bar	Track Spikes	Asks	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Chicago R3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Cleveland R3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Ensley T2	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Fairfield T2	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Gary U1	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Ind. Harbor B3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Johnstown B3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Joint U1	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Kansas City S2	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Lackawanna B3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Lebanon C6	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Minecroft C6	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Pittsburgh O1	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Pittsburgh P5	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Pittsburgh J3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Pitt'g, Cal. C7	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Seattle B2	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Steelton B3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Struthers Y1	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Terrace C7	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50
Youngstown R3	3.60	4.00	4.70	6.15	9.35	4.50	4.50	4.50

### TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.505
18	4	1	—	5	\$2.13
18	4	2	—	—	\$1.65
1.5	4	1.5	8	—	\$1.05
6	4	2	6	—	\$1.05
High-carbon chromium					35¢
Oil hardened manganese					35¢
Special carbon					32.5¢
Extra carbon					27¢
Regular carbon					23¢
Warehouse prices on and east of Missis-					
sippi are 3.5¢ per lb higher. West of					
Mississippi, 5.5¢ higher.					

### CLAD STEEL

Base prices, cents per pound, f.o.b., mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coteseville, Pa. L4	29.5	
Washington, Pa. J2	29.5	
Claymont, Del. C4	28.00	
Conshohocken, Pa. A4		27.50
New Castle, Ind. I2	26.50	25.50
Nickel-carbon		
10 pct Coteseville, Pa. L4	32.5	
Inconel-carbon		
10 pct Coteseville, Pa. L4	40.5	
Monel-carbon		
10 pct Coteseville, Pa. L4	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. A4		77.00
Aluminized steel sheets, hot dip, Butler, Pa. A7		7.75

\*Includes annealing and pickling, or sandblasting.

### ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in.	Length in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.35
CARBON		
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

### FLUORSPAR

Washed gravel, f.o.b. Rosclaire, Ill.  
Price, net ton; Effective CaF<sub>2</sub> content:  
70% or more \$43.00  
60% or less 40.00

### BOLTS, NUTS, RIVETS, SCREWS

#### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

#### Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List			
	Less Keg	K.	Less Keg	K.
1/2 in. & smaller	15	28 1/2	15	28 1/2
9/16 in. & 5/8 in.	12	25	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive	9	23	1	16 1/2
1 1/2 in. & larger	7 1/2	22	1	16 1/2

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive	13	25	2	17 1/2
1 1/2 in. & larger	8 1/2	23	2	17 1/2

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive	19 1/2	31 1/2	12	25
1 1/2 in. & larger	12	25	6 1/2	21

#### Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
1/2 in. & smaller	35	45	28 1/2	39 1/2
9/16 in. & 5/8 in.	29 1/2	40 1/2	22	34
3/4 in. to 1 1/2 in.				
Inclusive	24	36	15	28 1/2
1 1/2 in. & larger	13	26	8 1/2	23
Light				
7/16 in. & smaller	35	45		
1/2 in. thru 5/8 in.	28 1/2	39 1/2		
3/4 in. to 1 1/2 in.				
Inclusive	26	37		

#### Stove Bolts

Pct Off List

Packaged, steel, plain finished. 48—10  
Packaged, plate finish. 31—10  
Bulk, plain finish. 62\*  
\*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.  
\*\*Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

#### Rivets

Base per 100 lb

1/2 in. & larger \$7.85

#### Cap and Set Screws

(In bulk)

Pct Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 1/2 in. x 6 in., SAE 1020, bright. 54  
1/4 in. thru 1 in. up to & including 6 in. 48  
1/4 in. thru 1/2 in. x 6 in. & shorter high C double heat treat. 46  
1/4 in. thru 1 in. up to & including 6 in. 41  
Milled studs. 35  
Flat head cap screws, listed sizes. 16  
Fillister head cap, listed sizes. 34  
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter. 53

#### Machine and Carriage Bolts

Pct Off List

	Less Case	C.
1/2 in. & smaller x 6 in. & shorter	15	28 1/2
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2
All diam. longer than 6 in.	14	27 1/2
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	

### REFRACTORIES

#### Fire Clay Brick

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5) \$94.60  
No. 1 Ohio 88.00  
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00  
No. 2 Ohio 79.20  
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50) 13.75

#### Silica Brick

Mt. Union, Pa., Ensley, Ala. \$94.60  
Chlds, Pa. 99.00  
Hays, Pa. 100.10  
Chicago District 104.60  
Western Utah and Calif. 111.10  
Super Duty, Hays, Pa., Athens, Tex., Chicago 111.10  
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50  
Silica cement, net ton, bulk, Hays, Pa. 18.70  
Silica cement, net ton, bulk, Ensley, Ala. 17.60  
Silica cement, net ton, bulk, Chicago District 17.60  
Silica cement, net ton, bulk, Utah, and Calif. 24.70

#### Chrome Brick

Per Net Ton

Standard chemically bonded Balt., Chester \$83.00

#### Magnesite Brick

Standard, Baltimore \$104.00  
Chemically bonded, Baltimore 93.00

#### Grain Magnesite

St. % in. grains

Domestic, f.o.b. Baltimore in bulk fines removed \$62.70  
Domestic, f.o.b. Chewelah, Wash., in bulk 36.30  
in sacks 41.80

#### Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ \$13.75

### LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports) Per gross ton

Old range, bessemer \$8.70  
Old range, nonbessemer 8.55  
Mesabi, bessemer 8.45  
Mesabi, nonbessemer 8.30  
High phosphorus 8.30  
After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

### METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags. 7.4¢ to 9.0¢  
Canadian sponge iron, del'd, in East 10.00¢  
Domestic sponge iron, 98+ % Fe, carload lots 15.5¢ to 17.0¢  
Electrolytic iron, annealed, 99.5+ % Fe 42.5¢  
Electrolytic iron, unannealed, minus 325 mesh, 99+ % Fe 53.5¢  
Hydrogen reduced iron, minus 300 mesh, 98+ % Fe 63.0¢ to 80.0¢  
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+ % Fe 83.0¢ to \$1.48  
Aluminum 31.5¢  
Brass, 10 ton lots 30.00¢ to 33.25¢  
Copper, electrolytic, 10.75¢ plus metal value  
Copper, reduced 10.00¢ plus metal value  
Cadmium, 100-199 lb. 95¢ plus metal value  
Chromium, electrolytic, 99% min., and quantity, del'd \$3.50  
Lead 7.5¢ to 12.0¢ plus metal value  
Manganese 57.0¢  
Molybdenum, 99% 32.75¢  
Nickel, unannealed 88.0¢  
Nickel, annealed 95.0¢  
Nickel, spherical, unannealed 92.0¢  
Silicon 38.5¢  
Solder powder, 7.0¢ to 9.0¢ plus met. value  
Stainless steel, 302 83.00¢  
Stainless steel, 316 \$1.10  
Tin 14.00¢ plus metal value  
Tungsten, 99% (65 mesh) \$6.00  
Zinc, 10 ton lots 23.0¢ to 30.5¢

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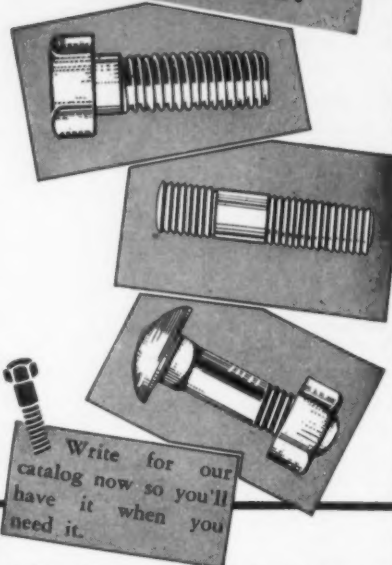
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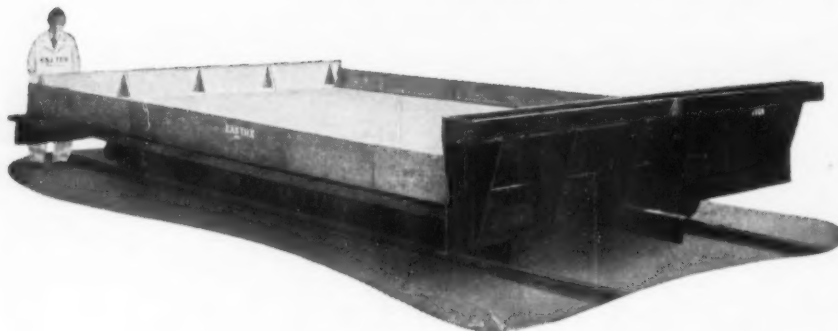
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## Ferroalloy Prices

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.00

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered. High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	22.76
Less ton lots	25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.	
Carloads	27.75
Ton lots	30.06
Less ton lots	31.85

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	\$1.14
0.50% max. C	1.10
9 to 11% C	1.08

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si

### Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe	19.00
Carloads	22.30
Ton lots	23.10
Less ton lots	23.60

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si	
Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

### CMSZ

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C	
Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C	
Ton lots	20.75
Less ton lots	22.00

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50



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## Ferroalloy Prices

Continued

### Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.  
F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O. .... \$185  
F.o.b. Johnstown, Pa. .... \$187  
F.o.b. Sheridan, Pa. .... \$185  
F.o.b. Etna, Clairton, Pa. .... \$188  
\$2.00 for each 1% above 82% Mn, penalty, \$2.15 for each 1% below 78%.  
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.  
Carload, bulk ..... 10.95  
Ton lots ..... 12.55

### Spiegeleisen

Contract prices gross ton; lump, f.o.b.  
16-19% Mn 19-21% Mn  
3% max. Si 3% max. Si  
Palmerston, Pa. \$74.00 \$75.00  
Pgh. or Chicago 75.00 76.00

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.  
96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.  
Carload, packed ..... 34.75  
Ton lots ..... 36.25

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.  
Carloads ..... 28  
Ton lots ..... 30  
Less ton lots ..... 32

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.7% max. C, 0.06% P, 90% Mn	26.25	28.10	29.30
0.07% max. C	25.75	27.60	28.80
0.15% max. C	25.25	27.10	28.30
0.30% max. C	24.75	26.60	27.80
0.50% max. C	24.25	26.10	27.30
0.75% max. C			
7.00% max. Si	21.25	23.10	24.30
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.			
Carloads			9.90
Ton lots			11.30
Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo.			\$1.15

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 19.15

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.  
Carload bulk ..... 9.90  
Ton lots ..... 11.55  
Briquet, contract basis carlots, bulk delivered, per lb of briquet ..... 11.15  
Ton lots ..... 12.75

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$90.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.  
96% Si, 2% Fe ..... 21.70  
97% Si, 1% Fe ..... 22.10

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.  
Carloads, bulk ..... 6.95  
Ton lots ..... 8.55

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.  
25% Si ..... 20.00 75% Si ..... 14.30  
50% Si ..... 12.40 85% Si ..... 15.55  
90.95% Si ..... 17.50

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.  
Cast Turnings Distilled  
Ton lots ..... \$2.05 \$2.95 \$3.75  
Less ton lots.. 2.40 3.30 4.55

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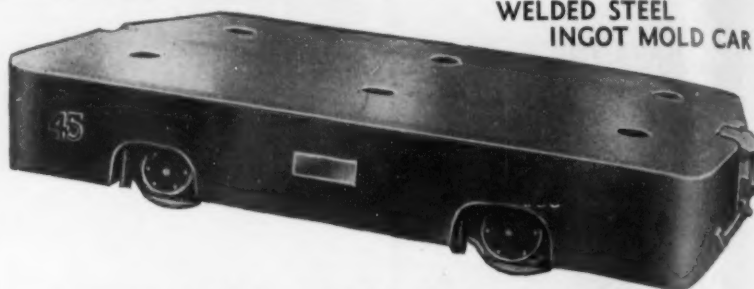
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## Ferroalloy Prices

Continued

<b>Ferrocolumbium</b> , 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.	
Ton lots	\$4.90
Less ton lots	4.95
<b>Ferro-Tantalum-Columbium</b> , 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta	\$3.75
<b>Ferromolybdenum</b> , 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo	\$1.32
<b>Ferrophosphorus</b> , electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	\$65.00
10 tons to less carload	\$75.00
<b>Ferrotitanium</b> , 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.35
<b>Ferrotitanium</b> , 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.50
Less ton lots	1.55
<b>Ferrotitanium</b> , 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	\$177.00
<b>Ferrotungsten</b> , standard, lump or 1/4 x down, packed, per pound contained W, 5 ton lots, delivered	\$5.00
<b>Ferrovanadium</b> , 35-55% contract basis, delivered, per pound, contained V.	
Openhearth	\$3.00-\$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.20- 3.25
<b>Molybdenic oxide</b> , briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	\$1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa.	\$1.13
<b>Simanal</b> , 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢
<b>Vanadium Pentoxide</b> , 86-89% V <sub>2</sub> O <sub>5</sub> contract basis, per pound contained V <sub>2</sub> O <sub>5</sub>	\$1.28
<b>Zirconium</b> , 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
<b>Zirconium</b> , 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	7.00¢
<b>Boron Agents</b>	
<b>Borosil</b> , contract prices per lb of alloy, del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B	\$5.25
<b>Bortam</b> , f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
<b>Corbortam</b> , Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots, per pound	10.00¢
<b>Ferroboration</b> , 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	\$1.20
F.o.b. Wash., Pa.; 100 lb up	
10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50
<b>Grainal</b> , f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	\$1.00
No. 6	68¢
No. 79	50¢
<b>Manganese-Boron</b> , 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	
Ton lots	\$1.46
Less ton lots	1.57
<b>Nickel-Boron</b> , 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	\$1.80
<b>Silenz</b> , contract basis, delivered.	
Ton lots	45.00¢

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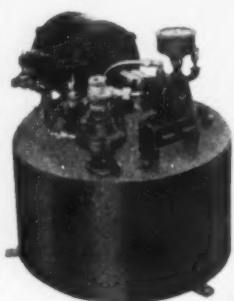
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March 27, 1952

173





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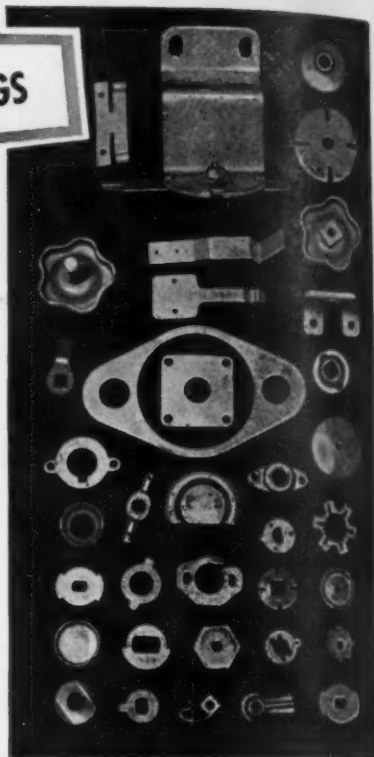
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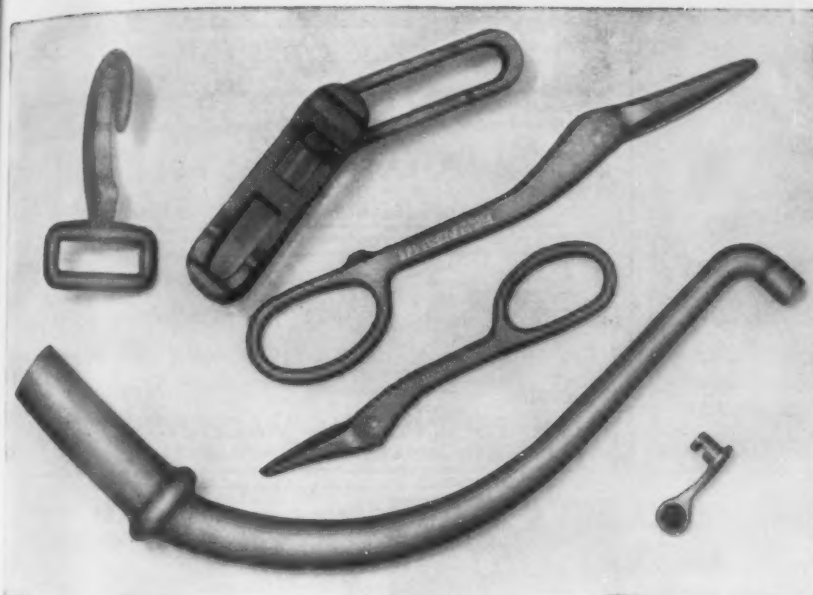
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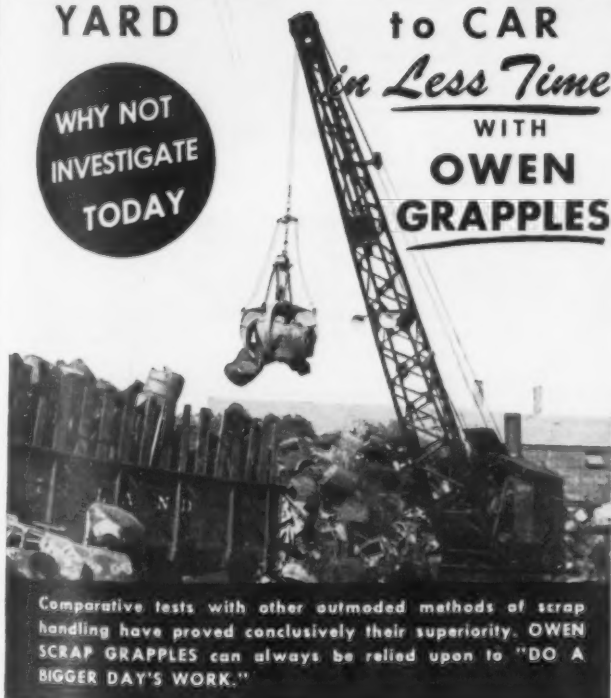
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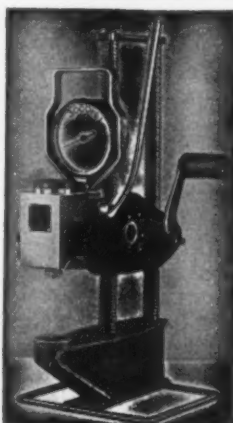
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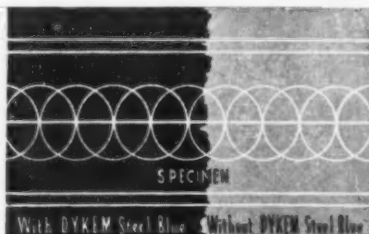
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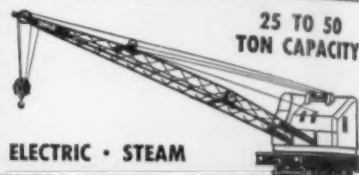
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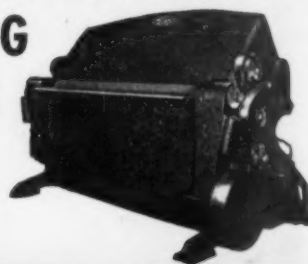
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 20" x 12" x 21" Worthington, With 2200 Volt 60 Cycle Motor and all operating equipment  
 22" x 24" x 24" Ingersoll Rand Compressor with 635 H.P. G.E. Synchron. Motor 2200/3/60

### AIR COMPRESSOR—PORTABLE

215 cu. ft. Ingersoll Rand, Diesel Driven, Mounted on Pneumatic Tires, with Type UD18 International diesel Motor

### BALER

Model 22-P-99 Logemann Baler, Box 82"x18"x24". Bale Size approx. 12"x11"x18"

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100 ton Baldwin Southwark Hydraulic Pipe Bender Dies for bending pipe 2 1/2" to 8" incl.

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### BRAKE—LEAF TYPE

8 1/2" Drels & Krump Leaf Type Bending Brake, Motor Driven with 5 H.P. A.C. Motor  
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### BRAKE—PRESS TYPE

12" x 1 1/2" Drels & Krump Press Brake, M.D. Bed Extension to 90"

### BUILDING

22 Williams White Bulldozer, Motor Dr. With 60 H.P. Motor, 440 volt, 3 phase, 60 cycle. Face of Crosshead 20" x 90". Movement of Crosshead 24"

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6000 lb. Hrosius Floor Type Gasoline Driven Charging Machine, Equipped with Peel, Buda Gasoline Engine, Rubber Tires

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6 Ton Gantry Crane 75' Span, 35' Overhang Each End Three Motors 15 H.P. 220 v. 3 ph. 60 cycle

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5 ton Robbins Myers 28' Span 220/3/60  
 5 ton Northern 50' Span 440/3/60  
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 15 ton With 3 Ton Auxiliary Hoist 22' Span 440/3/60  
 15 ton Shaw 60' Span 220 Volt D.C.  
 15 ton Niles 48' Span 220/3/60  
 15 ton Toledo 48' Span 220/3/60  
 30 ton Northern 65' Span 220 Volt D.C.  
 With 15 ton Auxiliary Hoist 27' Span 220 Volt D.C.  
 30 ton Morgan 57' Span 220 Volt D.C.  
 30 ton Northern 54' Span 440/25/3 A.C.  
 With 10 ton Auxiliary Hoist 79' Span 220/3/60  
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Yoder Model "M" Hydraulic Flying Rotary Cut-off Machine, 10' Bed, Capacity 4" O.D. x 1.125" wall. Complete with Elec. Equipment

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 100 ton Henry & Wright Dieing Machine

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For 57-H 6 Spindle Vertical Hydraulic Drilling Machine, Complete with Elec. Equip.

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4" McCabe Pneumatic Flanging Machine, Pneumatic Hold-downs, Circle Flanging Attachment and numerous dies

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3" National High Duty, Air Friction Clutch  
 5" National  
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 1", 2", 3", 5" Acme

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 48" x 72" Six Turning Mill, With Elec. Equipment  
 International Type REJ Joint, Clamp Rollover and Draw Molding Machine, 300# Capacity

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Swindell-Dressler Rectangular Bell Radiant Tube Annealing Furnace. Stocks have piling height of 135" with outside dia. of 54" and inside diameter 30". Operating Temperature 1550°F  
 Westinghouse Bell Type Annealing Furnace, Hearth 30" Diameter x 32" High  
 100 KW Continuous Electric Bright Annealing Furnace Heating Chamber 4'6" x 30" Long. Cooling Chamber 44' Long in two parts  
 Surface Combustion Radiant Tube Annealing Furnace. For bright annealing copper tubing, Hearth-heating zone 30' long, 3" wide

### FURNACE—HEATING

60 KM Leeds & Northrup Homo Furnace #9478-UB-23. With Controls, Work Space 28" dia. x 28" deep

### FURNACES—HEAT TREATING

Electric Furnace Co. Rotary Furnace Hearth 31" Dia. 2' wide, Sq. Ft. Hearth Area 436. Chamber 30' Long. Cooling Chamber 18' Long  
 Westinghouse Roller Hearth Furnace Elec. Heated Charge Space 54" wide x 11" high. Operating Temp. 1550°F

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400 lb. Moore Type "UT" Melting Furnace. Top Charge. Complete with Transformer. New 1943—Little Used

1000 lb. Detroit Type LFV Electric Rocking Indirect Arc Furnace, Conical Shell Design with Detachable Door. Complete with Transformer Equipment  
 15 ton Heroult Model V-12 Top Charge Hydraulically Operated, Complete with Transformer Equip.

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10 x 36" Norton Model C-14481 Cylindrical Grinder. Complete with Elec. Equip.

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1200, 1600 lb. Chambersburg  
 1000 lb. Billings & Spencer

### HAMMERS—STEAM DROP

10,000 lb. Chambersburg  
 1500 lb. Erie

### HAMMERS—STEAM FORGING

1200 lb. Massillon Single Frame  
 1500, 1600, 2000, 3000, 4000 lb. Chambersburg  
 600, 1500, 2500 lb. N.B.P.  
 600, 1100, 1500, 2000, 2500, 3500, 4000# Erie

### HAMMERS—MISCELLANEOUS

No. 2B Nazel Hammer, Motor Driven  
 No. 6N Nazel Hammer, Geared Motor Drive  
 200 lb. Bradley Compact Hammer, Arr. for Motor Drive with 10 H.P. A.C. Motor

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No. 731 Torsion Stretcher Leveler, Complete with pump and motors. Capacity Sheet 14' x 2' 6" wide

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Cincinnati Hydromatic Plain Milling Machine, Model 5-48, Complete with Elec. Equip.

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40 H.P. Westinghouse 440/3/60, Complete With Drum Control and Multiple Speed Switch, General Electric  
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 No. 3 National—Size 6D  
 No. 3 Glader—Sizes 6D, 7D, 8D, 9D  
 Angell—Sizes 10D, 12D, 16D, roofing

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32x35"x10" Niles One Rail Head  
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 60x60"x12" Niles-Bement-Pond, Four Head  
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### PLANNER—ROTARY

No. 4 Espen Lucas Column Facing Machine, Motor Dr. Capacity 14"—196 lb. "H" Columns

### PRESSES—HYDRAULIC

No. 200 Milwaukee Briquetting Press, Complete with Pumps, Platen Load 118 tons, Hydraulic Operating Pressure 2100 lbs. psi.  
 75 ton Williams White Straightening Press, 37" Stroke, Bed 9' x 16", 6 1/2" Dia. Ram  
 150 ton Beatty Hydraulic Extrusion Press, Work Cylinder 3' dia. x 30" long. Complete with Pump and Motor  
 150 ton Elmes Double Action Hydr. Press 20" Stroke of Blankholder, 32" Stroke of Punch Slide, 36" x 37" Bed Area  
 200 ton Bliss Hydrodynamic, 48" Stroke, Bed Area 24" x 24", Hydr. Pump Incl.  
 500 ton Southwark Open Throat Hydraulic Press, 15" Stroke, Platen 56" x 58"  
 700 ton Elmes Forming Press, 27" Strokes, Platen Size 40" x 88"

1500 ton Mesta Steam Hydraulic Forging Press, 48" Stroke, 8' x 3'6" Between Columns—Including Whiteman Manipulator Rotating Type

### PRESS—HYDRAULIC WHEEL

100 ton Elmes Inclined Hydr. Wheel Press, 72" Between Parallel Bars. Complete with Pump and Motor

### PRESSES—STRAIGHT SIDE

No. 60 Toledo Double Geared Tie Rod Press 255 ton, Friction Clutch, 18" Stroke, 36 1/2" x 53" Bed Area  
 No. 3 Ferracute Super Speed Punch Press, 30 ton Capacity, NEW 1946—never used  
 No. 675B Bliss Single Geared, 1 1/2" Stroke, Double Roll Feed & Chopper, 10 H.P. A.C. Motor  
 No. 620 Bliss High Production Press, 1 1/2" Stroke

### PRESSES—TOGGLE DRAWING

No. 14B Bliss Toggle Drawing Press, 58" Between Upright, 24" Stroke of Blankholder, 28" Stroke of Plunger  
 No. 163 1/2 Toledo 200 ton Capacity, Area of Ram 39"x48", Inner Stroke 17", Outer Stroke 12"

### PRESSES—TRIMMING

Bliss S.S. Trimming Press with Side Shear, 250 Ton Capacity, 8" Stroke, 52"x30" Bed Area  
 No. 3 Erie Flywheel Drive Trimming Press, 3 1/2" Stroke, 18" Between Guides

### PUNCH—BEAM

Long & Allstatter Double End Beam Punch, Capacity Beam Punch End—Punch flanges and web 24" I-beam and smaller

### PUNCH & SHEAR COMBINATIONS

No. 1/2 Buffalo Universal Ironworker, M.D., Capacity Rounds 1 1/2", Sq. 1 1/2", Angles 3x3x3/4", Punch 1" thru 3/4"

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Kling Deep Throat Riveter & Punch, Belted Motor Drive with 10 H.P. A.C. Motor, Capacity Rivets 3/4" Cold, 1/2" Hot, Capacity Punch 3/4" thru 1/2" Mild Steel

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10' Sections Lamson Roller Gravity Conveyor, Each Section 10' Long, Rolls 2 1/2" Dia. x 24" long

### ROLLING MILLS

9 x 20" Schmitz Single Stand Two High  
 12" x 16" Single Stand Two High, Comp. with Elec. Equip.  
 12"x24" Waterbury Farrel Two High  
 18"x24" Waterbury Farrel Two Stand Two High  
 20"x36" Poole Two Stand Two High  
 21"x48" Mackintosh Hemphill Three Stand Two High  
 Each Complete with Elec. Equip.  
 22"x40" Continuous Single Stand Two High

### ROLLS—FORMING

Model LH-13-a & LH-20-a Yoder Roll Forming Machines, 8 Stand, 1 1/2" Dia. Spindle

### SHEAR—ANGLE

Long & Allstatter Double Angle Shear, Model B, Capacity 60x3/4", Complete with Elec. Equip.

### SHEAR—BAR

No. 2 LH Levels Open End Bar Shear, Motor Drive, Capacity 1 1/2" Round

### SHEAR—BILLET

Long & Allstatter "C" Frame Billet Shear 5" Stroke, Bed Area 20" x 41"

### SHEARS—ROTARY

No. 60 Quickwork Rotary Shear, 1/2" Capacity  
 No. 100 Kling Rotary Shear, 1" Capacity

### SLITTERS

24" Niagara Steel Coil Slitter, Capacity 6 cuts 5/16" Equipped with Quick Change Head  
 31" Yoder Sheet Slitter No. 530, Capacity 3 Cuts, 194" to 8 Cuts, 150", Motor Dr.  
 72" Yoder Gang Slitter, Capacity 5 Cuts 20 Ga.

### STRAIGHTENERS

Sutton Single Cross Roll Straightener, Motor Driven, Capacity 1/2" to 1 1/2" Tubes or Bar, Timken Roller Bear., Complete with Pump and Motors  
 1/2" Shuster Straightening & Cut-Off Machine, 30" Cut-Off, Complete with 15 H.P. A.C. Motor

### SWAGING MACHINES

No. 3A Standard, Capacity 1/2" Solid 1 1/2" Tube  
 No. E4 Langelier, Capacity 1 1/2" Tubing  
 No. H5 Langelier, Capacity 1 1/2" Tubing  
 No. 408 Elms Swager, Capacity 4" Tubing, Length of Dies 8"

### TESTING MACHINES

100,000 lb. Olsen Universal Hydraulic Testing Machine  
 300,000# Southwark Emery Universal Hydraulic

### TRIMMING LINE

#1049 Torrington Trimming Line, With Feed Rolls and Scrap Cutter, Capacity for steel or aluminum alloys 1/2" max., Trimmed with 22" min., 60" max., Scrap Length 1/2" min. 2 1/4" max.

### TUBE FORMING MACHINE

Rafter 8-Stand Tube Forming Machine, Capacity 1 1/2" O.D. with Lock Seam

### WELDERS

No. 22 Swift Hand Operated Flash Welder, New 1943—Little Used  
 150 KVA Federal P2-12A Press Type Spot Welder 440 volt single phase 60 cycle  
 Taylor Windfold Press Type Spot Welder, Type HWRD-36-3 HI-WAVE  
 700 KVA Federal Flash Welder, Enclosed Rim Type Ring Size 6" to 35" Dia. x 12" Wide, 440 Volts, Single Phase

### WIRE MACHINERY

No. 10 Vaughn Motoblock, 24" Block, Complete with Electrical Equipment  
 No. 3 Waterbury Farrel 6-Die Upright Roll Wire Drawing Machine, Capacity Start No. 8 Ga. Annealed Brass, Finish #16 B & S Ga.

Manufacturing

**ITTERBUSH & COMPANY, INC.**  
 50 CHURCH ST., NEW YORK CITY 8

Equipment

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March 27, 1952

Telephone Cortlandt 7-3437

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 Surplus Mfg. Equipment Inventories Purchased

# THE CLEARING HOUSE

## MILES' QUALITY

AUTOMATICS, Two OOG Brown & Sharpe  
AUTOMATIC, 1/4" 4-spindle Gridley Model G  
AUTOMATICS, 1 1/4" & 1 1/2" Cone 4-spindle  
AUTOMATIC, 8" New Britain chucker, 4-spindle  
AUTOMATIC, 8" Bullard Multi-Au-Matic, 6-spindle  
serial 10770  
BORING MILL, 4" Detrick & Harvey horizontal,  
floor type  
BORING MILL, 84" Gisholt vertical  
BORING MILLS, Two No. 5D Moline, 6-spindle  
cylinder boring  
BROACH, No. 1 Foote Burt duplex surface  
BROACH, 2-ton American horizontal hydraulic  
BROACH, V42 American hydraulic, 18 ton  
BROACH, No. UUI030 LaPointe 4-spindle, 1948  
BULLDOZER, No. 22 Williams & White  
DRILL, No. 310 Baker heavy duty  
DRILL, 24" Cincinnati upright  
DRILL, 24" No. 25 Foote Burt  
DRILL, 11-spindle No. 1 Bausch  
DRILL, 12-spindle No. 10 Defiance rail type  
DRILL, 36-spindle Bausch, adjustable spindle  
DRILLS, 1- and 4-spindle Avey hydraulic feed  
GEAR HOBBERS, No. 12H G&E  
GEAR HOBBERS, No. 130 Cleveland Rigidhobber  
GEAR HOBBERS, No. 3 Adams Farwell  
GEAR HOBBERS, Two No. 12 Barber Colman  
GEAR HOBBERS, Nos. 1 and 25 SA Lees Bradner  
HONES, Two No. 2606 Barnes hydraulic, late type  
HONE, No. 2610 Barnes hydraulic, late type  
GEAR SHAVER, 8"-12" Red Ring  
GRINDERS, CENTERLESS, Two No. 2 Cincinnati,  
one with pressure lubrication  
GRINDERS, CYLINDRICAL, 10x18 Norton, types  
A & C  
GRINDERS, CYLINDRICAL, 10x18 Norton with  
hydraulic quick feed  
GRINDER, CYLINDRICAL, 12"x36" Bath universal  
GRINDERS, INTERNAL, Nos. 16-28, 16F28, and  
24-36 Bryant  
GRINDERS, INTERNAL, Nos. 72A3 and 72A5  
Heald, late type  
GRINDERS, SURFACE, 12" and 16" No. 22 Healds  
GRINDER, THREAD, late No. 33 Excella, now  
arranged for groove grinding  
HAMMER, No. 5N Hazel pneumatic  
HAMMER, 40 lb. Bradley helve  
LATHE, ENGINE, 18" Rockford, QCG, cone drive  
LATHE, TURRET, Nos. 3 & 7 B&O cone, motorized  
MILLERS, Two No. 2 Cincinnati plain  
MILLER, 4-36 Cincinnati hydraulic  
MILLERS, Nos. 1, 2 and 3 Kent Owens hand  
MILLER, 18" Cincinnati automatic  
MILLER, 24" Cincinnati automatic duplex  
MILLER, type 45 Product-O-Matic  
MILLER, 30 1/2" x 21" x 12" Ingersoll 4-spindle  
planer type  
MILLER, 48" x 20" x 20" Ingersoll planer type,  
3 vertical heads  
MILLER, 30" Ingersoll 2-spindle rotary continuous  
MILLER, 84" Ingersoll 6-spindle rotary continuous  
MILLERS, Six Ingersoll rise and fall  
MILLER, THREAD, Type C Hall planetary  
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees Bradner  
PLANER, 28"x28"x8" Gray double housing, one head  
PLANER, 36"x36"x8" Cleveland open side  
PRESSES, Nos. P01, P1, P2, P3, P4, P5 and  
CA4 Ferracute  
PRESS, No. 61 Cleveland OBI  
PRESSES, Nos. 56 1/2, 57 1/2, and 77 1/2 Bliss s.s.  
trimming  
PRESS, No. 245 1/2 Hamilton s.s. tiered frame  
PRESSES, Nos. FG53 & FG54 Ferracute knuckle joint  
PRESS, 800 ton No. 665 Toledo knuckle joint coining  
PRESS, No. DAB411 Hamilton double action toggle  
draw  
PRESS, 100 ton HPM hydraulic  
PRESSES, 500 ton & 1000 ton Baldwin Southwark  
"Hy-Speed" vertical hydraulics  
RIVETERS, No. 5A Grant pedestal vibrating type  
REAMERS, three Houde specials  
SLOTTER, 16" Bement Miles crank  
SAWS, Three 81GS Kalamazoo metal cutting band, new  
SAW, 7" No. 14 Higley cold-cutting  
SAWS, three L-W (Toledo) power hack, new  
SHAPER, 20" G&E, Lima drive  
SHAPERS, Two 24" Queen City  
SHAPER, 27" Morton draw cut  
SHEAR, 38" throat No. 17F New Duty  
TAPPER, 14-spindle No. E5 Natco  
TAPPERS, Two No. 71 Ettco  
TAPPERS, Two Greenlee 3-way special  
TAPPER, 15" Hammond sensitive drilling & tapping  
TESTER, 230,000 inch-pound Tinius-Olsen No. 2  
torsion  
THREADERS, 2" Landis pipe threading and cutting  
THREADERS, Two 3/4" Landis, double spindle  
THREADERS, 2" Oster rotary head  
TIPSFTTERS, Two 4" Ajax heavy duty, twin-near  
WELDER, 200 KVA Federal flash butt  
WELDER, 100 KVA Thompson automatic spot  
WELDER, 25 KVA Federal spot, 20" reach  
WELDERS, 12" and 14", 12 KVA American Elec-  
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60"x20" NILES BEMENT POND Geared Head  
Engine Lathe, rapid traverse  
56"x18" C.M.C. Heavy Duty Lathe, 24 Speed  
Geared Head, power rapid traverse, 30HP  
AC motor  
14"x30" HENDEY Lathe, 12 speed geared  
head, taper, collets  
No. 1L GISHOLT Turret Lathe, bar feed,  
chucks, 1943  
No. 2L GISHOLT Turret Lathe, bar feed,  
chucks, 1946  
No. 2B FOSTER Geared Head Turret Lathe,  
rapid traverse, AC motors  
No. 5 FOSTER Ram Type Universal Turret  
Lathe, bar feed, taper attachment, motor  
in base  
24" BULLARD New Era Type Vertical Turret  
Lathe, side head, motor drive taper attach-  
ment  
100" BERTRAM (Niles Patterns) Vertical  
Boring Mill, 2 heads on rail, rapid traverse,  
new 1932  
1 1/2" LANDIS Double Head Bolt Threader,  
with leadscrews, MD  
No. 1 DOUGLAS Plain Horizontal Mill,  
table 8"x32", power feeds, motor in base,  
No. 40 taper, new 1942  
No. 5 CINCINNATI Plain Horizontal Mill,  
rectangular overarm, MD  
No. 5-60, CINCINNATI Plain Hydromatic  
Mill, 1945  
No. 60 NEW BRITAIN Automatic, 6 spindle,  
1" capacity, new 1942, completely rebuilt  
No. 3 AVEY Type MA6 — 4 spindle Drill,  
Aveymatic power feed, No. 3 Morse taper,  
new 1942  
4' AMERICAN High Speed Sensitive Radial  
Drill 9" column, AC motor on arm  
No. 6 TOLEDO O.B.I. Press, 56 Tons  
72A5 HEALD Sizematic Internal Grinder  
25A HEALD Rotary Surface Grinder, 24"  
diameter, magnetic chuck  
36"x36"x10" G. A. GRAY Maxi-Service Planer  
reversing motor drive, box table, rapid tra-  
verse  
36" ROCKFORD Hydraulic Openside Shaper  
Planer, new 1940  
36" OHIO Dreadnaught Shaper  
75 Ton HENRY & WRIGHT Double Crank  
Dieing Machine, roll feed and scrap cutter

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Colburn 54" Vertical Boring Mill, 2 rail heads  
King 42" Vertical Boring Mill, 2 heads  
Pond 10" Vertical Boring Mill, 2 heads  
Niles 42"-50" Burnisher, Facer and Box Borer, late type,  
motorized  
Cincinnati-Bickford 21" Sliding Head Floor Drill, 4 SCD,  
#3 Morse taper  
Mueller 3 1/2" column Radial Drill  
Fellows 612 Spur Gear Shaper  
Fellows 725 Gear Shaper with Spur Guide  
Cincinnati 24" Back Geared Shaper  
Columbia 28" Back Geared Crank Shaper  
Gould & Eberhardt 16" Back Geared Shaper  
Gould & Eberhardt 24" Back Geared Shaper  
Gould & Eberhardt 28" Back Geared Crank Shaper  
Gould & Eberhardt 32" Back Geared Crank Shaper  
Gould & Eberhardt 18H Gear Hobber  
Gould & Eberhardt 36H Gear Hobber  
Gould & Eberhardt 96H Gear Hobber  
Gould & Eberhardt 608M Gear Rougher  
Brown & Sharpe 4-49 Automatic Gear Cutter  
Brown & Sharpe #10 Cutter & Tool Grinder  
Brown & Sharpe #12 Plain Grinder, reversing mechanism  
Heald #50 Internal Grinder  
Heald 72A3 Internal Plain Grinder  
Heald 70A Internal Grinder, late type  
Heald 78 Centerless, Internal & Cylindrical Grinder  
Jones & Lamson 8 x 31 Thread Grinder  
Landis Type C Plain Grinder, 10 x 18, late type  
Landis 16" x 72 Plain Cylindrical Grinder  
Micro Internal Grinder, Model F.G.  
Sellers 4T Tool Grinder, late type  
Sellers 6T Tool Grinder, late type  
Blount Model B-3 Special Application Lathe for turning,  
chucking, polishing and lapping  
LeBlond 13" x 8" G.H. Lathe, 9 spindle speeds  
LeBlond 30" x 18" bed #SCD Lathe, 9" centers, taper  
attachment, 18 spindle speeds  
Lodge & Shipley 16" x 8" G.H. Lathe, 12 speeds  
Lodge & Shipley 18" x 8" G.H. Lathe, 12 speeds  
Lodge & Shipley 20" x 8" G.H. Lathe, 12 speeds  
Oster 601 WD Turret Lathe with bar feed  
Reed-Prentice 20" x 10" G.H. Lathe, motor in base, 78"  
centers, Timken bearing  
Warner & Swasey 3A Turret Lathe, Geared Head  
American 36" x 40" G.H. Internal Face Plate Drive, 18  
speeds, 33" center distance, taper attachment  
American 48" x 20" G.H. Internal Face Plate Drive, 18  
speeds, 120" centers  
Kemp Smith #3 Plain Mill, 3 SCD  
LeBlond 2 1/2" Universal Mill, 3 SCD, motorized  
Brown & Sharpe 2Y Plain Miller, 4 SCD  
Brown & Sharpe #3 Plain Miller, 4 SCD  
Hall Style "D" Planetary Miller, late type  
Liberty 36 x 36 x 18" Double Housing Planer  
Bliss #37 Coining Press, 3/4" stroke, 150 ton  
Rasmussen 6 x 6 Power Hack Saw

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16-Y-28 Bryant Internal Grinder  
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Chucking Machine  
#61A Fellows Gear Shaper  
#30 Waterbury Farrel Thread Rollers  
#0 Brown & Sharpe Automatic Screw  
Machine with Turner Drives  
1529.

GI-A Acme Gridley 1 1/2" Automatic  
Screw Machine  
16" Gould & Eberhardt Shaper  
#3 Cincinnati Millers Series  
A1604 & A1604

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60" Hanchett Face Grinder

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Box, Single Sheathed, 50-Ton Capacity  
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 Gondolas, All-Steel, 55-Ton, Solid Bottom

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 Hoppers, Twin, All-Steel, 50-Ton, Cross Dump  
 Hoppers, All-Steel, 70-Ton, Cross Dump  
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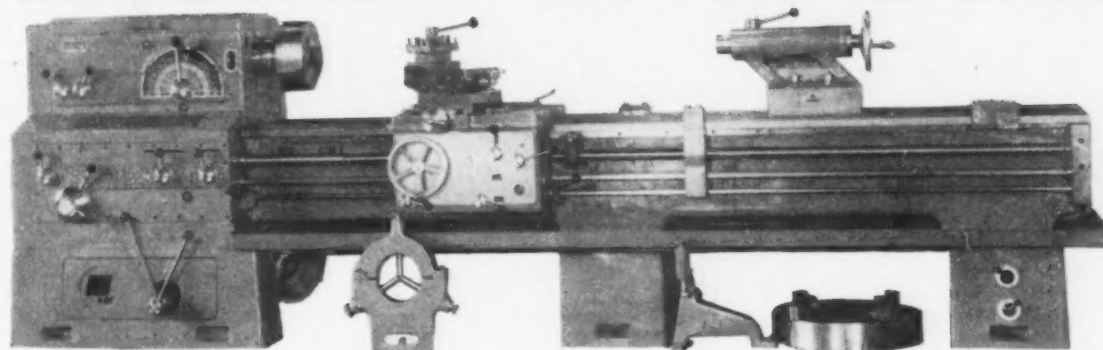
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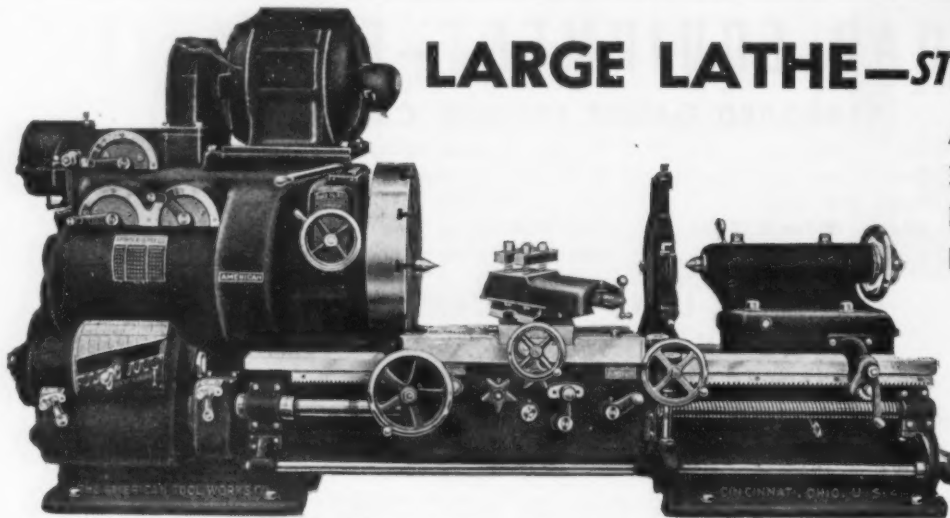
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#### BORING MILLS

89" BULLARD Vertical Turret Lathe  
42" BULLARD Vertical Turret Lathe

#### LATHES

14" x 8' STAR Engine Lathe  
20 x 48" AMERICAN Pacemaker Lathe  
20" x 10' LODGE & SHIPLEY Selective Geared Head Lathe  
20" x 144" centers LeBLOND Geared Head Lathe, 1942

#### AUTO. LATHES & TURRETS

#5DE POTTER & JOHNSTON Automatic Turret Lathe  
#6S POTTER & JOHNSTON Automatic Turret Lathe  
#1HS LIBBY Heavy Duty Turret Lathe  
1L GISHOLT Saddle Type Turret Lathe, 1950

#### GRINDERS

#104 RIVETT Internal-External Grinder  
8" x 18" LANDIS Type C Plain Grinder  
8" x 18" CINCINNATI Plain Saddle Type Grinder  
10" x 18" LANDIS Type C Plain Grinder  
8" x 18" NORTON Vert. Spindle Surface Grinder  
10" x 22" LANDIS Type C Hyd. Pl. Grinder, '42  
16" x 96" LANDIS Type B Pl. Cyl. with Gap Bed  
#16/28 BRYANT Hyd. Internal Grinder  
#73 HEALD Internal Centerless Grinder  
#TG-185 JONES & LAMSON Internal Thread Grinder, new  
#55 HEALD Cylinder Grinder

#### DRILLS

Model No. 35 ALLEN Three Spindle Hand Feed Sensitive Drilling Machine.  
24" CINCINNATI BICKFORD Upright Drill  
32" CINCINNATI BICKFORD Upright Drill  
30" CINCINNATI BICKFORD Radial, Gear Box, M.D.  
5' REED PRENTICE Radial Drill  
5' AMERICAN Triple Purpose Radial  
ES NATCO Mult. Spindle Drill—Hyd. table  
#425 BAKER S.S. Heavy Duty Drill  
#2MS LELAND GIFFORD 4-spindle Drill

#### GEAR EQUIPMENT

#725A FELLOWS High Speed Gear Shaper  
#368M GOULD & EBERHARDT Gear Rougher  
#12 FELLOWS Gear Shaver

#### MISCELLANEOUS

15" BETTS Vertical Slotter  
#3L LAPOINTE Hyd. Broach, 1945  
#1/2 B P&W Two Spindle Reaming Machine, '44  
4 1/2" x 36" P&W Model C Thread Miller  
6" TAYLOR & FENN Spline Millers  
4 1/2" CONOMATIC 4-spdl. automatic Screw Machines  
20" CINCINNATI Hand Feed Rotary Table  
36" dia. Plain Rotary Tables  
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AUTOMATIC, 1 1/2"—4 Spin. Gridley Model G  
BOLT THREADER, 2" Landis, 2 hds., M.D. (2)  
BOLT THREADER, 1 1/2" Reliance Williams  
BORING MILLS, 100" Cincin., Heavy, 2 Heads, M.D.  
BORING MILL, 60" Colburn, 2 hds.  
BORING MACH., 4 1/2" Bar, Defiance, Tble. Type  
BORING MACH., 4 1/2" Bar, N.B.P. Tble. Type, M.D.  
VERT. Attach. for Boring Mach. for 330T G. & L. Mill & Outer Support  
BORING MACHINE, 3" Bar Lucas, Table Type  
RADIAL DRILL, 5' 14" Col. Amer., M.D.  
RADIAL DRILL, 8' Niles, No. 10, M on Arm, Late  
RADIAL DRILL, 4' Western, M.D. (2)  
RADIAL DRILL, 3 1/2" 10" Col. Feedick, M.D.  
DRILL, 24" Cincin. Bick., Tapping  
DRILL MULTI, 22 spin., No. 14, Bausch No. 3, M.T.  
GEAR CUTTER, No. 13, B. & S. Spur & Bevel  
GEAR HOBBER, No. 36H Gould & Eberhardt  
GEAR PLANNER, 11" Reinecker, Bevel, A.C., M.D.  
GEAR SHAPERS, Nos. 61A & 64 Fellows, 1945  
GEAR SHAPER, No. 6 Fellows  
GRINDERS, FACE, 84" Builders, 32" wheel  
GRINDERS, No. 16, Blanchard, 26" Chuck  
GRINDER, SURFACE, 14" P. & W. Vert. Spn. B.B.  
GRINDER, 20" x 120" Landis Hyd. Type B  
GRINDER, #16Y28 Bryant, Int. 1943  
GRINDER, Micro Int. M.D.  
GRINDER, No. 6-T Sellers Tool, '42  
KEYSEATER, No. 5 Baker, Capacity 4" x 36"  
KEYSEATER, No. 5 Mills & Merrill, capty. 8" x 24"  
LATHE, 60" x 45" cen. Mackintosh-Humphill, 1942  
LATHE, 42" x 31" cen. Putnam, T. A., M.D.  
LATHE, 36" x 20" cen. Putnam, 2 carr., T.A.  
LATHE, 32" x 25" cen. Pittsburgh, 2 carr., 2 T.A., '42  
LATHE, 30" x 10" cen. LeBlond, 3 cons, QCG, T.A.  
LATHE, 28" x 12" Bed Bridgeford Grd. Hd. (3)  
LATHE, 25" x 12" Bed, B & E, T.A. Grd. Hd.  
LATHE, 18" x 10" Bed, L. & S. Select Grd. Hd., M.D.  
LATHE, 12" x 6" Bed Hendey, Grd. Hd.  
TURRET LATHE, 26" Libby, "C" 4 1/2" capty.  
TURRET LATHE, 21" Acme Univ., Brass, Late  
TURRET LATHE, No. 18 Foster, Univ. 2" capty. (2)  
TURRET LATHE, No. 28 Foster, Univ. 3 1/2" capty.  
TURRET SCREW MACH., No. 4 W. & S. 1 1/2" Bar  
THREAD MILLER, 12" x 60" Morey Shield, '43  
MILLER, No. 6 Sundstrand Rigidmill Hand  
MILLER, No. 1 1/2 B. K. & T. Univ., M.D.  
MILLER, No. 1 Cleveland, Univ., M.D.  
MILLER, No. 4A Brown & Sharpe, Univ.  
MILLER, No. 48—B. & S. Plain  
MILLERS, No. 3 Cincin. Pl. Motorized  
MILLER, No. 4 Cincin., High Power, Vertical  
MILLER, No. 5-48 Cincin., Hydromat  
PIPE THREADER, 4", Oster, M.D., New 1947  
PIPE THREADER, 2" Landis A.C., M.D.  
PLANNER, FROG & SWITCH, 42" x 18" x 10" N.B.P.  
PLANNER, PLATE, 50" x 1" Cleveland, M.D.  
PLANNER, 36" x 36" x 14" Whitcomb, 2 Hds., M.D.  
PLANNER, 36" x 36" x 12" Woodward, 4 Hds., M.D.  
PLANNER, 24" x 24" x 5" Gray, 1 Hd., M.D.  
PRESS, No. 73 1/2 Bliss S.S., 8" Stroke, 76 ton capty.  
PRESS, No. 58, Toledo S.S. Grd., 171 Ton capty.  
SHAPER, 36" Morten Drive Cut  
SHAPERS, 32", 20" & 16" Gould & Eberhardt (3)



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Multiple Punch No. 6 Cleveland 750-tons  
Multiple Punch Size G L. & A. 940-tons  
H. & J. Straightening Rolls 5/8" x 48"  
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ing Roll Cap. 1-1/4" x 12"  
L. & A. Double Angle Shear 8 x 8 x 1",  
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5" Ajax Upsetting & Forg. Machs. twin  
gears, twin flywheels, susp. slides.  
National Upsetting & Forg. Machs. 1", 2"  
Ajax and Acme Upsetting & Forg. Machs.,  
not susp. slides, sizes from 1" up.

3" Ajax Single Stroke Solid Die Ball  
Header, cap. 4 1/2" balls, susp. slides,  
air clutch

W. W. Bulldozers, #2, 3, 5; #3 & #4 High  
Speed; #29-U type, reversing clutch  
Chambersburg & B. & S. 800 lb. Beard  
Hammers.

3400 lb. Single Leg Forg. Hammer  
Nazel Air Forg. Hammer #6-B, 7" sq.  
Bradley Hammers, Cushioned Helve, Up-  
right & Compact

#2 H. & J. 6x6x3/4" Angle Shear  
#48 Hendley & Whittemore Allig. Shear  
Bar Shear Pels F. V.-50, 4 1/2" Rd.  
Bar Shear #12 B. C. Buffalo 5" Rd.  
Bar Shears, Open End, Table cast on  
Slant; also Guillotine 1 1/2" to 3"  
Knuckle Joint Press 200-ton, 6" str; EG-54  
Ferracute 400-ton

600-ton R. D. Wood Incl. Hydr. Locomo-  
tive Wheel Press, 96" betw. bars  
#50-A Quickwork Whiting Rotary Shear  
3/4"

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Single and Double End Punches, also Beam  
Punches from 250 to 450-tons

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MACHINES, TAPERS, COLD BOLT TRIMMERS,  
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COLD AND HOT PUNCH NUT MACHINES,  
POINTERS.

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## Eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

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2 spindle Mackins, pneumatic control, type 3 CAP  
No. 22 Murshey Tapper, 6 to 2 pitch  
No. 1 Bakewell Precision, m.d.  
Bamb Radial Drilling & Tapping Machine, m.d., latest

### TURRET LATHES AND SCREW MACHINES

No. 1 Cincinnati-Acme Semi-Universal, m.d., chucking, Timken  
No. 1L Gisholt, m.d., Timken  
No. 2 Pratt & Whitney Shavers, m.d.  
No. 2F Foster Fastomatic, m.d., Timken  
No. 2L Gisholt, m.d., chucking, Timken  
No. 3 Cincinnati-Acme, Full Universal, m.d., chucking  
No. 3 Foster Geared Head, m.d., bar  
No. 3B Foster Universal, m.d., bar  
No. 3F Foster Fastomatic, m.d., Timken  
No. 4 Warner & Swasey Plain, cone, bar and chucking types  
No. 4 Warner & Swasey Universal, m.d., chucking  
No. 4A Warner & Swasey Universal, m.d., chucking  
No. 4FU Foster Fastomatic, m.d., latest  
No. 7 Bardons & Oliver, cone  
No. 1 Pratt & Whitney Hand Screw Machine, cone  
2 1/2" x 24", 3" x 36", 3 1/2" x 32", 4" x 34" Jones & Lamson Geared Head, m.d., bar and chucking types

3 1/4" Cincinnati-Acme Geared Head Flat Turret, chucking and bar types

18" Libby Type A, m.d., chucking  
20" Acme, s.p.d., bar  
20" Acme, cone  
28" Gisholt, cone  
28" Libby Type C, m.d., chucking  
No. 5 Woods Tilted Turret, Model D, cone  
No. 601 Oster Geared Head Rapiduction, m.d. in leg, chucking

### SHEET METAL MACHINERY

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Gray Turret Head Metal Cutter, cap. 1/4", 36" throat  
No. 2 Libert Nibbler, 28" throat  
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No. 3—5/8" cap. Gray Sheet Metal Cutter, m.d.  
8' No. 196 Robinson Power Squaring Shear, m.d.  
8' x 1/2" cap. No. 188 Dreis & Krump Leaf Brake, m.d.  
No. 336—cap. 3/4" W. J. Savage Co. Nibbler

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2" Acme All Steel Heading, Upsetting & Forging Machine, m.d.  
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Wagner Saw Sharpener, m.d.  
Logan Hydraulic Vertical Shaver, m.d.  
No. 1 Fischer Oil Groover, m.d.  
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American Aircraft Motor Generator Set, Model MASO 104  
No. 2 Cochran Bly Filing Machine, pedestal type, belt drive  
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Dwight Slate Machine Co. Marking Machine, hand operated  
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No. 11S Cochran Bly Saw Sharpener, belt  
1 ton Shaw Electric Cable Hoist  
Portable Greasing Machine, motor operated  
No. 6 Martin Marking Machine, lever operated  
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We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times.

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#### WATERBURY-FARREL WIRE DRAWING BENCHES

No. 00—Fine wire draw—with 14-8" Heads  
Lift head type—Hand draw out  
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Motor Drive and Starters — Fine Condition  
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1 Column Facing Machine, Espen Lucas  
No. 4  
Capacity—14" 196# Column  
Equipped with 10 Horsepower Motor  
60 cy.—220 Volts.  
Bolt Clamp and quick acting Air Clamp  
Used—400 Hours  
Floor Space—25" x 60"

CAN BE SEEN AT  
OUR PLANT

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### ELECTRIC FURNACE to 1850°

8 x 12 x 16 Inside with Auto. Temperature Control  
4.5 K.W. Sliding door, cheap to operate. Substantial.  
Dependable for Machine Shop—Tool Room. New. \$250.

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FURNACE—Roller Hearth,  
I.D. 15'8" x 3'6" x 11"

FURNACE (5)—Electrical Tool

GEAR HOBBER—12" G & E

GRINDER—10" x 24" Landis

HAMMER—35 Ton Drop Forge

GUN BORING LATHE—64"x65'0"

LATHE—32"x21" c/c Bridgeford G.H.

PRESSES—Hydraulic, 1000-4000 Tons

PRESSES—Hyd. 100-2800 Tons for

105 mm Shells

STRAIGHTENING PRESS—2000 Tons

(Plate)

STRAIGHTENER—6" Bars, 10 1/2" Tubes

SLITTER—36", 10 cuts 1/2" steel

RIVETING HAMMER—5/8" Hi-Speed.

600 spm

TAPPERS—3/4"-2", 6 Spindles

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### ROTARY FURNACE—NEW 1943

1—Type T-48-S Lindberg Tubular Rotary  
Hearth Furnace, Ser. #5994, 55 K.W., 440  
volts, 3 pha., 60 cye., 1850° F. Maximum  
operating temp., comp. with air operated  
door, gas curtain, one loading shelf,  
variable speed hearth drive with motor  
and chromel alumel thermocouple with  
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O.D. and the effective door opening is  
12" wide x 11" high. The overall dim. of  
the furnace are approx. 7'-0" x 7'-0" high.

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No. 3 1/2 BLISS Straight Side Double Crank,  
Tierod Frame, 42" R to L x 30" F to B,  
1 1/2" stroke, AC—MD

225 Ton STOLL Double Crank, Straight Side,  
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2—Gas Holders, each 100M  
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Excellent condition.

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# SOMETHING RARE NOW-IN-STOCK HEAVY TURRET LATHE

Equivalent to 4A—New 1943. Arranged for chucking—used 1 year. Will take 8" thru spindle, cross sliding turret. Swings 33" over bed, 20" over cross slide. 24 speeds 12-260 RPM; power rapid traverse. Taper attachment for cross slide, copying attachment for turret. Built by Magdeburg—Germany's Top Turret Lathe.

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Barclay 7-4185

- 1—Pittsburgh Shear & Knife Co. Shear, 34" blades, double end, capacity 1" mild steel or 3/4" stainless.
- 1—500 HP Mill Drive, motor 900 RPM, Gear Reducer 500 HP, two speed, ratio 900 to 175/125 RPM.
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- 1—20" x 48" x 60" 4-Hi Non-Reversing Temper Pass Mill. Complete with all electrical.

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## 350 Ton Press

Southwark—Hydraulic, 4 column—7" diam., Bed Area—8' x 5', Diameter of Ram—38", Stroke 36", Daylight 76", Air Cushion 60" x 56", Height 20', Weight 60 Tons.

Less Pump and Motor  
Formerly used on accumulator  
Priced Reasonable  
Skidded and ready for shipment

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9/16" Round—45,000#  
Prime

Immediate Shipment

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BLISS 200-100 Double Action Hydro-Dynamic Press, Bed Area 36" x 48" with 18" Blankholder & 26" Draw Plunger Stroke  
BLISS #3 1/2 A, 3 1/2 B, 3 1/2 C, 4 & 4A Toggle Draw Presses  
BLISS #26A Knuckle Joint Press, 800 ton cap., 5" stroke with Dial Feed

Above Machines Can Be  
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- 1—4 Spindle Gridley
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- 1—2 Spindle Diematic
- 1—1 Spindle Cleveland Model B
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- & many other machines
- Wanted—Kearney & Trecker & Cincinnati milling machines.

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10-Ton Krane-Kar, Mobile Unit, Model A.Y. with solid tires and 24 ft. telescopic swing boom, partially enclosed cab, good condition, new 1941.

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2000# Erie Board Drop, Model F  
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### HYDRAULIC PRESS

1800 Tons Wood, 13' x 7 1/2', Platen

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1—P-2 Ferracute, 2" Stroke, M. D.  
1—#53 Consolidated, 4" Stroke, M. D.  
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1—150 Ton Chambersburg, 8" Stroke, M. D.

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42" Newton Cold Saw  
3—2000# Platform Lift Trucks, Gas Engine  
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36" Bullard Single Head  
#60 Waterbury Farrel Thread Roller, Special for extra long threads, Automatic Feed  
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Specialists in Forge Shop Equipment  
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Phone—Detroit TUxedo 1-7140

Buffalo Bending Rolls, Size O-A, Vertical Pinch Type  
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Sontag Size 13 Universal Iron Worker  
Above Machines Late Model, Motor Driven Excellent Condition.

P & H 300 Ampere Gasoline Welder mounted on Pneumatic Tires, Late Model, Condition Excellent.  
Hobart Motor Driven Arch Welders, 300 Ampere, Stationary & Portable, Condition Guaranteed.  
Quick Change Geared Lathe 27 inches by 16 feet with Chucks & Equipment, Condition Good.

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200 Tons 5" I Beams 10.0 # x 40'—\$6.50 Cwt.  
200 Tons 6" I Beams 12.5 # x 40'—\$6.50 Cwt.  
200 Tons 8" I Beams 18.4 # x 40'—\$6.50 Cwt.  
200 Tons 12" I Beams 31.8 # x 40'—\$6.50 Cwt.  
100 Tons 6" H Beams 20 # x 40'—\$6.50 Cwt.  
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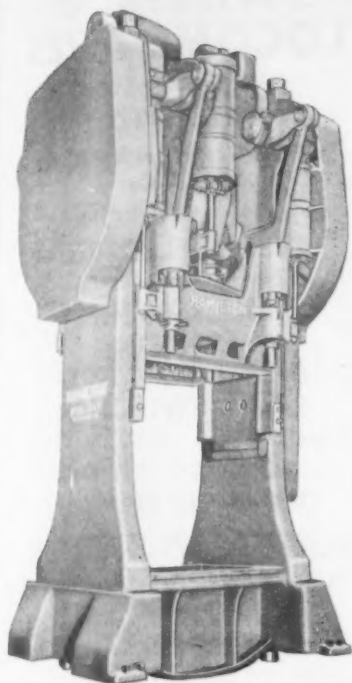
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# THE CLEARING HOUSE

## EMERMAN Offers from STOCK

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STRAIGHT SIDE, DOUBLE CRANK,  
SINGLE ACTION

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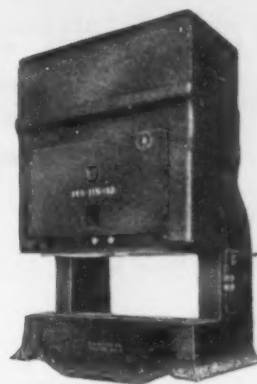
Double Action, Toggle  
Drawing, 650-ton capacity  
Area of bed 62" FB x 74" RL  
Stroke of plunger slide 39"  
Stroke of blankholder slide 28"  
Shut height, 75"  
60 HP Driving motors,  
Complete with all electrical equipment  
Weight approx.: 188,000 lbs.

#### Toledo, No. 96-E, 345-ton capacity,

Area of bed 51" FB x 101" RL  
Stroke of slide 18"  
Shut height, 48"  
30 HP Driving motors  
Complete with electrical equipment  
Weight approx.: 125,000

#### Hamilton, No. 12412½, 650-ton capacity

Area of bed 50" FB x 126" RL  
Stroke of slide 12"  
Shut height 54"  
Air cushion bed,  
40 HP Driving motors  
Complete with electrical equipment  
Weight approx.: 179,000 lbs.



#### (4) Bliss Cap Frame— No. 2-EG-315-132

Fully Enclosed Two Point  
Overhanging Single Action  
375-ton capacity  
Area of bed 48" RB x 156" RL  
Stroke of slide 12"  
40 HP Driving motors,  
Complete with all electrical equipment  
Weight approx.: 123,000 lbs.

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IN UNUSUALLY FINE CONDITION!**

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See Iron Age  
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Partial Listing  
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**MOTORS & GENERATORS, etc.**  
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America's Largest Stocks

**D. C. Motors, Generators & Controls**  
Any voltage or size—self or separate excited, constant and variable voltage and speed. LOW VOLTAGE, up to 10,000 amperes, for Plating, Anodizing, Battery Charging, Electrolytic, etc.

**A. C. Motors, Generators & Controls**  
Slip Ring, Squirrel Cage & Synchronous. Any size or frequency (including 400 cycle).

Also Cranes, Hoists, Pumps, Compressors, Welders, Transformers, etc.

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### HR PRIME MILD STEEL ROUNDS

60 tons 1" x 20'  
175 tons 1½" x 20'

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D.C. MOTORS					
Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G. E.	MC	600	400/500
1	1750	Whas.		600	550/700
1	1500	Whas.		525	600
2	1000	Whas.		450	600
1	940	Whas.	QM	250	140/170
1	600	Al. Ch.		250	400/800
1	500	Whas.		230	300/600
2	450	Whas.		550	415
1	350	Cr. Wh.	CCM-151H	230	1100
1	325	Whas.	MQ	250	300/900
1	300/300	G. E.	MPC	230	360/920
1	250	G. E.	MPC	230	400/500
1	150	G. E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
10	150	Cr. Wh.	88H-TEFC	230	900
1	150	G. E.	MPC	230	250/450
1	100	G. E.	CD-175	330	365/730
1	100/150	Whas.	AK-200	550	600
1	150	Whas.	AK-301	230	360/950
1	50/120	G. E.	MPC	230	250/1000
1	50/100	G. E.	MPC	230	225/450
1	100	G. E.	CDP-115	230	1750
2	92	Whas.	AK-173	230	575/1150
1	90	G. E.	CDM-1242-Z	115	1800
1	75	Whas.	AK-183	230	1750
1	75	Whas.	AK-180L	115	650
2	75	G. E.	CDM-1126-Y	230	2000
1	75	Cr. Wh.	CMC-65H	500/1800	
4	75	G. E.	TLC-50	230	850/2500
1	75	G. E.	RC-34	600	1200
1	60	El. Dy.	258	230	525/1050
1	50	Cr. Wh.	CCM	230	1750
1	50	El. Dy.	508	500	194/775
1	15/50	Cr. Wh.	CMC-81H	230	300/900
1	50	G. E.	CD-1531Z	230	1000/1750
1	50	El. Dy.	285	230	1000/1750
1	50	G. E.	RCP-34B	600	600
2	50	G. E.	RCP-31B	230	1750
1	40(New)	Whas.	AK-103-BB	230	1800/2400
1	40	Al. Ch.		230	600/1200
1	38	Whas.	AK-110L	575	1800
1	37½	Whas.	AK-180	230	350/1050
1	35	G. E.	RF-14	230	250/1000
6	25/30	G. E.	CD-105	230	600/2070

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2	125	G. E.	CO-1832	230	625
2	30	G. E.	MD-104½AA	550	700

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Self-starting Type

#### DC End

Size & Voltage: 3185 KW at 245 volts  
3965 KW at 305 volts

Amp: 13,000  
Type: HCC-24  
Speed: 300  
Form: P  
Serial: 5226957  
Mfg.: General Electric  
Cycle: 60

#### AC End

Type: AH  
D-C Volts: 30  
Form: P  
Phase: 6  
Armature amp: 6500  
Speed: 300  
Freq.: 60  
Serial: 5226958  
Mfg.: General Electric  
Complete with transformers and panel board. In good operating condition—can be inspected at original installation.

#### PLUS

Extra powerhouse panel board equipment: Switches, bus bars, ammeters, voltmeters and other items.

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With or without  
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Length can be increased
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- Attached buildings for offices, etc., have 2400 sq. ft.
- Main structure designed for 30 ton crane
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- Corrugated galvanized siding and concrete roof deck available, but which can be changed at buyer's option
- Land area—5 to 16 acres
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100 tons 3x3x1/4" x 20' \$7.00 Cwt.  
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160 tons 11 ga. x 20 Coil HR prime SAE  
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### FOR SALE

#### GENERAL ELECTRIC ROLLER HEARTH FURNACE

690 K.W., 440 V, 60 Cycle, 3 Phase

Operating Temperature—1250 Degree F.

Heating Chamber—5 ft. wall to wall  
60 ft. long with 3 ft. high entrance door.

Overall Dimensions—8 ft. wide x 13' high x 98' long including charge and discharge tables and cooling chamber.

Electrical Equipment—Three floor mounted control panels with contactors. Control and overload relays, throw switches and fusible control switch, two control switches.

Instrument—Four indicating temperature controllers, one recording controller, one instrument panel.

Charge & Discharge—One elevating charging table, one stationary roller charge table, one discharge table. Automatic charge and discharge mechanism. Automatic doors, variable speed motor driven rolls.

Cooling—American Blower size 5, 12,000 cu. ft. per minute with ducts for cooling chamber. G. E. Motor 7 1/2 H.P. 220/440 V. 3 phase 60 cycle.

**EXCELLENT CONDITION**

**Can Be Seen In Operation**

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STANDARD GAUGE

**ONE 65-TON  
DIESEL-MECHANICAL**

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**ONE 110-TON  
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Type 0-4-4-0 I.C.C. Condition

**ONE 1500 H.P.**

**120-TON**

**DIESEL-ELECTRIC  
ROAD SWITCHER**

Type 0-4-4-0 I.C.C. Condition

**GOOD CONDITION  
IMMEDIATE DELIVERY**

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21,000 #	.035	36 x 120"	" "
3,650 #	.035	41 x 97 1/2"	" "
5,075 #	.038	42 x 84"	" "
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4,500 #	.039	26/30" x 96/120"	" "
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20,000 #	14 Ga.	25/36" x 8/10' H.R. P&O	" "
5,000 #	.011	25 x 30" COLD REDUCED	" "
		T.M.B. PRIMES	" "
14,000 #	.135	18 x 26" Elec. T.P.	" "
		PRIMES	" "

Reasonably Priced  
Send for our Steel & Machy. List 870  
**SEABOARD STEEL CO., INC.**  
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Stiff-leg Derrick  
American Terry Size #17  
Capacity 35 Tons Mast 50 Feet  
Boom 110 Feet Price \$8500

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870 RPM, Westinghouse type CW, Slip Ring, 2200/-  
3/60, Semi-Magnetic Reversing Controls.

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We have for immediate shipment .109 x  
2 1/16" x Coil—GMC 3165—10,000 lb.  
Can be used as spring steel.  
Price: Mill.

**GLOBE TRADING COMPANY**  
1815 Franklin Street Detroit 7, Michigan

### NO. 8 BLISS S.S. PRESS

Double Crank—Tie Rod  
52" x 47" Bed Area  
3" Stroke  
Available Immediately

**LANG MACHINERY COMPANY**  
28th St. & A.V.R.R. Pittsburgh 22, Pa.

### AIR COMPRESSORS

ELECTRIC—676, 1302, 1700, 2500, 3146 & 5000 FT.

**DIESEL & GAS LOCOMOTIVES**

12—20, 30, 45, 60, 80 & 100 TON

**STEEL STORAGE TANKS**

77—10,000, 15,000, 20,000 & 25,000 GAL. CAP.

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REBUILT

### AIR COMPRESSORS

FULLY GUARANTEED

**EARL E. KNOX COMPANY**

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### CHUCKING MACHINES

2—Used #49 New Britain "Gridley", 4-spindles, cap.  
9", motors 3/60/220, New 1945. Can demonstrate.

**LATHE**

48" x 34" Driggs Geared Head with motor of 3/60/220.  
Distance between centers 24". Has four chuck jaws,  
30 years old. In good serviceable condition. Bargain.

**GALBREATH MACHINERY CO.**

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NEW and GUARANTEED RESULTS

Electric — Steam — Gas — Diesel

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Since 1902

**AMERICAN AIR COMPRESSOR CORP.**

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Telephone UNder 3-1666

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## MOTORS - M. G. SETS - TRANSFORMERS

ENGINEERED AND REBUILT BY SPECIALISTS IN OUR MODERN PLANT

### DIRECT CURRENT MOTORS

Qu.	H.P.	Make	Type	RPM
1***	3000	Whse.	Encl. (Rev.)	600
1***	2400	Whse.	Encl. (Rev.)	600
1***	1800	Whse.	Encl. (Rev.)	600
1***	1200	Whse.	Encl. (Rev.)	600
1***	800	Whse.	Encl. (Rev.)	600
1	350	G.E.	CD-160-A	1150
1	200/250	El. Dy.	No. 22	400/1200
1	250	G.E.	MPC	325/975
1***	200	G.E.	MPC	500/1200
1	200	Whse.	Mill	300/1200
1	180	G.E.	MPC	400
1	150	C.W.	SK-190	800
1***	125	Whse.	SK-184	575/850
1	125	Rel.	1995-F	300/1200
1	100/125	Whse.	1050-T	400/1200
1	90/100	G.E.	MPC	625/1125
1	50/75	Rel.	1995-F	300/1200
1	50	Whse.	SK	500/1500
1	40	Whse.	SK	250/1000
1	35	G.E.	SK-140	500/1700
1	35	G.E.	RF-14	500/1500
1	35	G.E.	CD-125	400/1200
1	35	G.E.	CD-147	300/1200
1	35	Rel.	35P	250/1000
1	35	Whse.	SK-150	400/1200
1	32 1/2	Whse.	SK-151L	400/1200
1	30/75	Whse.	E-145	400/1200
1	30	Al. Ch.	CDM-105	875/1750
1	27 1/2	El. Dy.	158	450/1350
1	25	Whse.	SK-125	500/1500
1	25	G.E.	RF-13	400/1600
1	25	Whse.	SK-140	400/1200
1	25	G.E.	CD-125	400/1200
1	25	Whse.	SK-111L	250/1000
1	20	Al. Ch.	E-130	400/1200
1	20	G.E.	CD-125	300/1200

All above 230-VDC except where marked \*\*\*.  
 \*\*\*-Pedestal bearing mill design 525/600-VDC.  
 Rev.—designed for mill reversing service.  
 \*—T.E.F.C.

### MOTOR GENERATOR SETS

Qu.	K.W.	Make	RPM	Volts DC	Volts AC
1	2400 (3-U)	Al. Ch.	730	525	4800
1	2400 (3-U)	Whse.	730	600	4800/2400
1	1000	G.E.	514	550	2300
2	500	C.W.	730	575	2300/440
1*	500	C.W.	730	250/275	2300/440
1	500 (3-U)	Whse.	1200	250	440
1	300	Al. Ch.	1200	250	2300
1	250	Whse.	1200	125/250	2300
1	300	Whse.	1200	125/250	2300/440
1	200	Ridgway	900	275	2200
1	155	G.E.	730	250	2300/440
1	150	G.E.	1200	500	2300/440
1	100	Al. Ch.	1200	125/250	4000/2300
1	100	Delco	1200	125/250	440/220
1	100	C.W.	1200	125	440/220
1	100	Ridgway	1200	275	4000/2300
1	85	C.W.	1200	250	4000/2300
1	75	Star	1200	230	440/220
1	75	Whse.	900	75	2200
1	75	Al. Ch.	900	250	2300
1	50	Burke	1750	250	440/220
1	35	Whse.	1750	250	440/220
1	25	Ideal	1750	125	230
3	20	Al. Ch.	1200	250	440/220

### SLIP RING MOTORS—CONSTANT DUTY 3-Ph., 60-Cy.

Qu.	H.P.	Make	Type	Volts	RPM
1**	1200	C.W.	SR	2200	237
1**	1000	Al. Ch.	ANY	2200	235
2	500	G.E.	MT-20	2200	360
1**	400	G.E.	I-16-M	2300	450
1	400	Al. Ch.	ANY	2200	514
1	400	G.E.	MT-412	2200	450
1	300	G.E.	I-15-M	2200	1200

Qu.	H.P.	Make	Type	Volts	RPM
1	300	Al. Ch.	ANY	2200	514
1	250	G.E.	MT-414	2200	300
1	200	G.E.	I-16-M	2300	585
1	150	G.E.	I-13-M	2300	1750
1***	125	Whse.	CW-870	2300	870
1	100	F.M.	H20C	440/220	900
1	75	G.E.	IM	440/220	895
1	75	Whse.	CW-7540	440/220	690
1	60	Whse.	CW	440/220	900
1	50	G.E.	MT-500	2300	1150
1	50	F.M.	SR	440/220	600
1	40	Al. Ch.	ANY	2300/440	485

\*\*—Mill type pedestal bearing.  
 In our stock you will find manual and magnetic primary and secondary controls 10 to 3000 lbs., which we can furnish complete for any requirements.

### TRANSFORMERS—Power

Qu.	Make	KVA	Type	Phase	Voltage
1	G.E.	2700	DH	3	7300/6900-240/480
4	G.E.	333	H	1	13200/1100-2200
3	Packard	250	A	1	13200-2200
3	G.E.	100	H	1	33000-2200
3	Whse.	100	SS	1	12075/10955-230/-460
3	Whse.	100	Auto		4160/2400-2400/-1385
3	Al. Ch.	50	OISC	1	22000-220
2	Uptegraft	37 1/2	HD		2300-115/230
2	Kyhlman	13	Dry	1	480-240
45 (new)	Al. Ch.	3	OISC	1	2400-120/240

### FREQUENCY CONVERTER SETS

1	750-KVA	Elec. Mch.	440/3/60 to 440/3/180
2	1200-KW	G.E.	2300/3/60 to 460/3/30
1	1700-KVA	Whse.	2300/3/60 to 2500/3/24

The above complete with control panels and starting equipment.

## ELECTRIC TRAVELING GANTRY CRANE

10-ton Champion 100' span between ground rails, 31' overhang one end, 23'9" other end, 45' lift, with 1200# of 100# rail. Now 550-VAC, will arrange for 220/440-VAC or 230-VDC. AVAILABLE FOR IMMEDIATE INSPECTION AND SHIPMENT. In excellent condition. The kind of crane that is seldom on the market.

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PHILADELPHIA 40, PENNA.

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DAVENPORT 4-8300

3—10-ton Shaw Overhead Cranes, 67'1" span, 230 VDC, box girders, structural end trucks, cage type Shaw motors and control, mechanical and electrical brake on hoist—heavy type—good condition—stored inside—ready to ship. PRICE f.o.b. Pittsburgh, Pa.

\$9,500.00 each

SEND ME YOUR CRANE INQUIRIES—

200 other cranes, various tonnages, spans and current.

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1—MORGAN LADLE CRANE, 125-TON MAIN TROLLEY, 25-TON AUXILIARY TROLLEY, FOUR GIRDERS, SPAN 84'3", GOOD CONDITION.

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## FOR SALE

Morton Draw-Cut Flash Trimmer  
 16" Stroke—(will handle 16" strip)  
 Complete with Roller Lifting Device  
 Late Type (1947), Little Used  
 Cost Today—\$13,750.00  
 Price: Reasonable

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Rebuilt and Guaranteed

## BUCYRUS-ERIE, MODEL 44-B, CRAWLER COMBINATION SHOVEL AND CRANE

2 yd. Shovel Attachment with Dipper Stick. 2 yd. Owen Clamshell Bucket. Powered by Buda Diesel Engine. Completely Rebuilt from Ground Up by Dempster Brothers, Inc. Can Be Inspected at Knoxville, Tennessee. Ready for Operation. This Is A Real Buy.

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Used Shafting. Forged and Turned. Ideal For General Machine Shop Use

No. Bars	Size	Length
1	12" Rd.	14'-8"
1	9 3/8" Rd.	15'-8"
2	7 7/8" Rd.	8'-3" & 12'-10"
2	7 3/8" Rd.	6'-10" & 13'-4"
1	7" Rd.	11'-4"
7	6 7/8" Rd.	7'-10" to 13'-3"
6	6 3/8" Rd.	5'-11" to 6'-5"
1	5 7/8" Rd.	16'-3"
8	5 3/8" Rd.	6'-7" to 10'-3"
6	4 7/8" Rd.	5'-0" to 7'-6"
1	4 3/8" Rd.	6'-8"
1	3 7/8" Rd.	10'-4"
1	2 3/4" Rd.	4'-0"

Will Sell at Whse. Price For H.R. C1020 or Less. Some Bars Have Keyways Throughout Part of Bar Only. We Cannot Furnish Certified Analysis.

**KORHUMEL STEEL & ALUMINUM CO.**  
3225 Como Avenue, S.E. Minneapolis 14, Minnesota

2—Babcock and Wilcox Coal Pulverizers, type E, size 32, comp. with 75 H.P. Allis-Chalmers, fan cooled, motors, fans and speed reducers, serial #3419, 3421.

These pulverizers were purch. new in 1942, and used but a short time, and replaced with larger units. They are fully comp. and in A-1 condition.

Pulverizers were used by a large elec. utility. Price: \$7500 ea. comp.

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Mechanical Tubing 1/4" to 14" O.D. • Seamless Pipe to 24" O.D. • Boiler & Pressure Tubes — Seamless or Welded from 3/8" • Stainless Steel Pipe, Tubing & Fittings • Tube Fabrication, Bending, Swaging, Upsetting, etc.

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EL 2-8182 McKPT 4-9107

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ONE OF THE LARGEST STOCKS IN THE EAST

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All wall thickness Manufactured.

Specialty large sizes.

Cutting — Threading — Flanging —

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**250 TONS**  
used  
**I-27 SHEET STEEL**  
**PILING 29'-31'**

Immediate Shipment from Stock  
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- 1—Burro Gas Rail Crane
- 1—Link Belt YC9A Cargo Crane
- 1—Koehring 304 Truck Crane
- 1—Lorain MC 414 Truck Crane
- 1—3/4 Lorain 41 Comb. S&D 1948
- 2—#6 and 80-D NW Shovels
- 2—10 Ton steel Guy & Stiff leg Derricks
- 1—6 Ton Huber 3W Roller
- 2—Mod. 3500 & 4500 Manitowac Draglines
- 1—45' Crane Boom for Link Belt LS90
- 1—DB Bulldozer 2U Series
- 1—801 Koehring Shovel & Crane
- 1—40 Ton Industrial Oil Fired Loco Crane 1943
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40-ton capacity Orton Model 40 Diesel Locomotive Crane, Built 1942. Cat. D17000 Engine. 65 Foot Boom. Excellent. 65-ton Whitcomb Diesel Electric Loco. Class 0-4-4-0, 580 HP. New 1944.

44-ton Gen. Elec. Diesel Electric Loco. New 1945. Class 0-4-4-0. 380 HP

14 Western 30 cu. yd. Side Dump Air Dump Cars. All Steel Drop Door and Lift Door Type.

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**TOOL STEEL**  
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1 3/4" x 2" x 10'	7,000 #
7/8" Rd. x 10'	14,000 #
7/16" Rd. x 10'	2,000 #

All New & Prime

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### Electric Furnace Transformer

200 KVA, West. Type SL, Prim 307/120, Sec. 120/60, 3 Ph, 60 Cy, OISC, Taps; and, separate Induction Voltage Regulator, 100 KVA, West. Type C, Prim 230/3/60, Sec. Amps 750, 33 1/3% Regulation.

Like New — Never Installed.

Immediate delivery from stock

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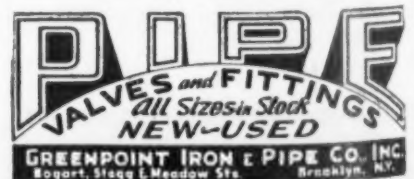
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No Priority Spot Delivery

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### MACHINES FOR YOUR YARD

Lorain 10-ton crawler crane  
Hughes-Keenan Roustabout crane  
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M-B factory floor marker  
Pioneer 4 x 8 vibrating screen  
New Wisconsin AB motors

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### RAILROAD EQUIPMENT

80 ton Lima coal burner 0-6-0 std. ga.  
50 ton Whitcomb Diesel Electric 0-4-0 std. ga.  
44 ton General Electric Diesel Elec. 0-4-0 std. ga.  
30 ton Davenport Diesel Mechanical 0-6-0 std. ga.  
24 ton Plymouth gas 0-4-0 std. ga.  
12 ton Plymouth gas 0-4-0 36" ga.  
10 ton Davenport gas 0-4-0 std. ga.  
8 ton Plymouth gas 0-4-0 std. ga.  
70 ton All Steel Hoppers std. ga.  
70 ton Flat Cars 40'6" std. ga.  
50 ton Flat Cars 72' std. ga.  
50 ton Flat Cars 40'6" std. ga.  
50 ton All Steel Twin Hoppers std. ga.  
40 ton double sheathed Box Cars std. ga.  
40 ton single sheathed Box Cars std. ga.  
5 yd. Koppel Dump Cars std. ga.  
3 yd. Koppel Dump Cars 36" ga.

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60# Relaying Rail  
75# Relaying Rail  
70# Relaying Rail  
100# Relaying Rail  
Used Creosoted Ties  
Used Tie Plates  
All Accessories

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Allis Chalmers Tractors  
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Car Repair Parts  
For All Types of  
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TANK  
CAR  
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#### • LOCOMOTIVES •

Switching engines—Excellent Condition  
25-TON PLYMOUTH, STD. G.A., MODEL RXIS  
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• 243 TONS TIE PLATES & ANGLE BARS •  
for 70-75# Rails

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36 inch gage. Four Steam Locomotives. Approximately 200 Flat Cars and Gondolas. Excellent Condition.

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New—Reconditioned—R. R. Cars.  
Box Flat Gondola Hopper & Tank.  
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Good Used R.R. Car Repair Parts.

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Your exact trackage needs filled "Faster From Foster" Track Tools & Accessories are properly matched and fabricated to meet all requirements and shipped from a reliable source.

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All Lengths, Sections, all standard makes your job requires. Also Rent Pile Hammers, Pile Extractors.

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10,000 Gallon R. R. tank car tanks

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Freight car repair parts  
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Contracting Equipment  
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## EVERYTHING FOR THE TRACK FROM SWITCH TO BUMPER

### NEW & RELAY RAILS in stock

12# THRU 130# SECTIONS

ACCESSORIES & SWITCH MATERIALS  
INQUIRIES SERVICED PROMPTLY

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### Wanted to Purchase: A LARGE SCRAP YARD

which is now in operation

Please list the following in your reply:

Average yearly tonnage processed (last 5 years)

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Type, capacity and present condition of processing and handling machinery

Average number of employees  
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Price desired.

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on unrated orders low carbon steel.  
Sheet—16 Ga. and 10 Ga. Plate  
—3/16" to 1/4". Flat Bar—3/8" x  
1 1/2" to 1" x 6". Structural Shapes  
—Tubing—5/8" OD x 11 Ga. to  
6 1/2" OD x 1/4". Pipe—1/2" Std.  
to 12" Std.

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### 4 Ten-ton Slag Pots wanted. LA CONSOLIDADA, S. A.

A. FLORES

Box 120

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### WANTED

- 1—Column Facing Machine with 30" diameter or larger cutting head. Espen-Lucas preferred.
- 2—Pneumatic Riveters 1" rivet capacity.
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VACUUM PUMP  
STEAM BOOSTER  
L.W.BAUER  
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OVERHEAD TRAVELING CRANES  
STRUCTURAL STEEL BUILDINGS  
TANKS

Benkart Steel & Supply Company  
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Buyers of Surplus Steel Inventories  
33 Years of Steel Service

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### FOR LEASE NEW BRICK STEEL INDUSTRIAL BUILDING

7,000 sq. ft. clear span, in process of construction, could finish to suit tenant. Located Western Ohio, on U.S. Rt. 25, midway Detroit, Cincinnati. Good town 6000 Pop. Excellent labor conditions, male, female, skilled, unskilled. Ground for expansion, parking. 2 R.R.'s siding available.

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100% of the stock in a gray iron foundry that produced 3600 tons of light gray iron castings in 1951. Plant is located 350 miles from Chicago, has dep. book value of \$270,000 and has been in operation for the past 32 years. If interested in purchasing this stock for \$150,000,

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Care The Iron Age, 100 E. 42nd St., New York 17

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or Equipment



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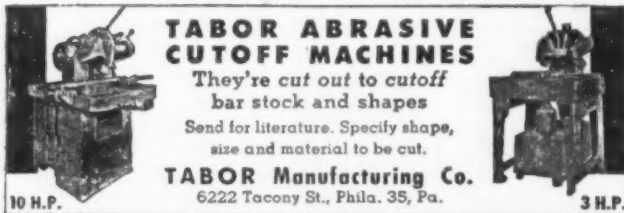
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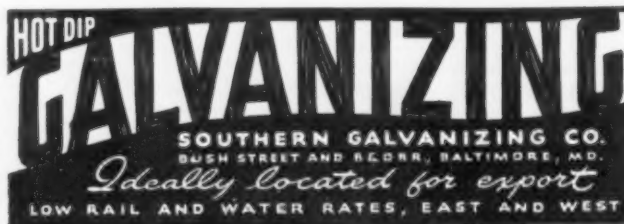
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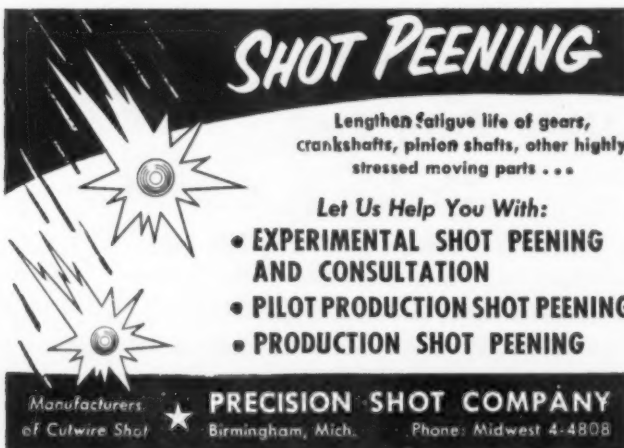
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## ADVERTISERS IN THIS ISSUE

A			
Affiliated Furnace, Inc.	152	Dunbar Bros. Co., Div. Associated Spring Corp.	39
Air Reduction	48	Du Pont de Nemours, E. I. & Co., Inc., Electrochemicals Dept.	43
Allegheny Ludlum Steel Corp.	69	Dykem Company, The	176
Aluminum Import Corp.	37		
American Air Compressor Corp.	186	E	
American Chemical Paint Co.	65	Eastern Machine Screw Corp., The	193
American Electric Co.	146	Eastern Machinery Co., The	183
American Lava Corp.	132	Eastern Tool & Mfg. Co.	192
American Monorail Co., The	136	Eastman Kodak Co.	115
American Welding & Mfg. Co.	72	Easton Car & Construction Co.	170
Anti-Corrosive Metal Products Co., Inc.	172	Electric Controller & Mfg. Co.	116
Arcos Corp.	62, 63	Electric Storage Battery Co., The	42
Armstrong, James P.	187	Electrolift, Inc.	177
Associated Spring Corp.	39	Elgin National Watch Co., Abrasives Div.	11
Atlas Car & Mfg. Co., The	67	Emmerman Machinery Corp.	185
		Enterprise Galvanizing Co.	174
B		Espen-Lucas Machine Works, The	176
Babcock & Wilcox Co., The Tubular Products Div.	47		
Barium Steel Corp.	91	F	
Barnes, Wallace Co., Div. Associated Spring Corp.	39	Fabricant Steel Prod., Inc.	184
Barnes-Gibson-Raymond, Inc., Div. Associated Spring Corp.	39	Fairbanks, Morse & Co.	25
Bauer, L. W.	190	Falk Machinery Co.	184
Belmont Iron Works	174	Federal Products Corp.	13
Belyea Co., Inc.	185	Fisher Associates	184
Benkart Steel & Supply Co.	190	Foster, Frank B., Inc.	187
Bennett Machinery Co.	182	Foster, L. B., Co.	189
Beryllium Corp., The	155	Frank, M. K.	189
Besly-Welles Corp.	142	Galbreath Machinery Co.	186
Bethlehem Steel Co.	1		
Bethlehem Contracting Co.	183	G	
Birdsboro Steel Fdry. & Machine Co.	114	Gibson, Wm. D., Co., Div. Assoc. Spring Corp.	39
Boardi Steel Corp.	176	Glazer Steel Corp.	186
Bohrad Steel Co.	126	Globe Trading Co.	183, 184, 186, 187, 188
Brownell, Hazard Machine Tools, Inc.	180	Goodman Electric Machinery Co.	187
Buffalo Bolt Co.	90	Goodyear Tire & Rubber Co.	10
Builders Steel Supply Co.	189	Gordon, Claud S., Co.	145
Bullard Co., The	77	Goss & DeLaew Machine Co.	176
		Gray Iron Founders' Society, Inc.	32
C		Greaves Machine Tool Co., The	177
Carborundum Co., Refractories Div.	89	Greenpoint Iron & Pipe Co., Inc.	188
Carpenter Steel Co., The	34	Griffin Manufacturing Co.	175
Carpenter Steel Co., The, Webb Wire Div.	174		
Central Steel & Wire Co.	15	H	
Cincinnati Grinders, Inc.	70	Haynes Stellite Company, a Div. of Union Carbide & Carbon Corp.	41
Cincinnati Machinery Co., Inc.	180	Hayward Company, The	193
Cincinnati Shaper Co., The	4	Heat & Power Co., Inc.	183
City Bank Farmers Trust Co.	75	Helical Tube Corp.	138
Claymont Steel Corp., Subsidiary of The Colorado Fuel & Iron Corp.	Front Cover	Helrick Construction Corp.	187
Clearing Machine Corp.	60	Hendrick Manufacturing Co.	149
Cleveland Crane & Engineering Co., The Tramrail Div.	17, 18	Herbert Machine Tool Co., Inc.	181
Cleveland Steel Tool Co., The	193	Hevi Duty Electric Co.	129
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div.	26	Hoskins Manufacturing Co., Inside Front Cover	
Columbia Steel & Shifting Co.	49	Howell Electric Motors Co.	127
Consolidated Railway Equipment Co.	189	Hubbard, M. D., Spring Co.	174
Continental Boiler & Sheet Iron Wks.	172	Hughes, Arnold, Co.	188, 190
Continental Salvage & Machinery Corp.	184	Hvatt Bearings Div. General Motors Corp.	194
Crawford, F. H., & Co., Inc.	186	Hydropress, Inc.	33
Crucible Steel Co. of America	173	Hyman, Joseph, & Sons	184
Cutler-Hammer, Inc.	Back Cover	Hyman-Michaels Co.	184, 185, 186, 188, 189
		Hynes Steel Products Co.	86
D			
Dalton Supply Co.	183, 184	I	
Davidson Pipe Company, Inc.	188	Industrial Plants Corp.	180, 184
Dell Stephenson & Co.	188	Inland Steel Co.	92
Delta-Rockwell Power Tool Div.	111	International Nickel Co., Inc. The	44
Diamond Manufacturing Co.	193	Iron & Steel Products, Inc.	181, 186
Donahue Steel Products Co.	182		
Dony, D. E., Machinery Co.	184	J	
Dow Chemical Co., The	121	Jaques Company, The	170
Dow Corning Corp.	52	Johns-Manville Corp.	46
Dravo Corporation	30	Jones & Laughlin Steel Corp.	135
Dreis & Krump Mfg. Co.	176		
		K	
		Kaydon Engineering Corp., The	119
		Kenilworth Steel Co., The	9
		Kinderman, Lou F.	184
		King, Andrew Co., The	176



# ADVERTISERS IN THIS ISSUE

Kings County Machinery Ex-  
change 184, 186, 188  
Kinslow Power & Equipment Co. 146  
Knox, Earl E., Co. 196  
Kold-Hold Manufacturing Co. 130  
Korhumi Steel & Aluminum Co. 188

**L**  
La Consolidada, S. A. 190  
Land, L. J., Inc. 185  
Landis Machine Co. 14  
Lang Machinery Co. 186  
Lebanon Steel Foundry 145  
Leland-Gifford Co. 193  
Lewthwaite, T. H., Machine Co.,  
Inc. 193  
Lincoln Electric Co. 152  
Link-Belt Co. 24  
Lodge & Shipley Co., The 36  
Lofth Engineering Corp. 123  
Logemann Bros. Co. 163  
Luria Bros. & Co., Inc. 161

**M**  
McLouth Steel Corp. 29  
MacCabe, T. B., Co. 187  
Machinery & Steel Div. of United  
Iron & Metal Co., Inc. 185  
Master Products Co. 149  
Mathews Conveyor Co. 176  
Maxwell Machinery Corp. 183  
Miles Machinery Co. 180  
Mixmobile Mfrs. 190  
Mississippi Valley Equipment Co. 188  
Modern Engraving & Machine Co. 31  
Morey Machinery Co., Inc. 182  
Morris Machine Tool Co. 78  
Morrison Railway Supply Corp. 189  
Murray, A. B., Co., Inc. 180

**N**  
National Automatic Tool Co. 22, 23  
National Business Bourse, Inc.,  
The 191  
National Machinery Exchange 184  
National Metal & Steel Corp. 167  
National Steel Corp. 133  
New Jersey Zinc Co., The 137  
Nicholson File Co. 129

**O**  
O'Connell Machinery Co. 180, 183  
Oakite Products, Inc. 171  
Ohio Locomotive Crane Co., The 176  
Ottemiller, Wm. H., Co. 176  
Owen Bucket Co., The 175

**P**  
Pangborn Corp. Inside Back Cover  
Pellets, Inc. 174  
Pennsylvania Salt Mfg. Co. 12  
Philadelphia Transformer Co. 188  
Phillip Brothers, Inc. 157  
Pittsburgh Steel Co. 45  
Platt Bros. & Co., The 192  
Pratt & Whitney, Div. Niles-  
Bement-Pond Co. 20, 21  
Precision Shot Co. 192  
Public Service Electric & Gas Co. 140  
Purdy Co., The 189

**R**  
Rail & Industrial Equipment Co.,  
Inc. 189  
Raymond Manufacturing Co., Div.  
Associated Spring Corp. 39  
Reading Crane & Hoist Corp. 147  
Reliance Steel Div., Detroit Steel  
Corp. 141  
Republic Steel Corp. 38  
Rhode Island Tool Co. 175  
Ritterbush & Co., Inc. 170, 179  
Roebbing's, John A., Sons Co. 40  
Russ-Elektrofen KG. 177  
Ruthman Machinery Co., The 177  
Ryerson, Jos. T., & Son, Inc. 6

**S**  
Salem-Brosius, Inc. 35  
Seaboard Steel Co., Inc. 186  
Shepard Niles Crane & Hoist  
Corp. 66  
Shimer, Samuel J., & Sons, Inc. 174  
Shore Instrument & Manufacturing  
Co., The 176  
Solomon, Max, Co. 186  
Southco Div. South Chester Corp. 29  
Southern Galvanizing Co. 192  
Southern New Jersey Development  
Council 143  
Spo Milwaukee Foundry Equipment  
Div. 124, 125  
Standard Iron & Steel Co. 189  
Stanhope, R. C., Inc. 186  
Stanley Works, The 146  
Steel & Tube Div. Timken Roller  
Bearing Co. 143  
Sun Oil Co. 82  
Superior Tube Co. 150

**T**  
Tabor Manufacturing Co., The 172  
Thomas Flexible Coupling Co. 134  
Thomas, R. J. 184  
Timken Roller Bearing Co., The,  
Steel & Tube Div. 143  
Tirrell Gas Machine Corp. 174  
Tractor & Equipment Co. 183  
Tramrail Div., The, Cleveland  
Crane & Engineering Co. 17, 18

**U**  
Udylite Corp., The 84  
Union Carbide & Carbon Cor-  
poration, Haynes Stellite Com-  
pany 41  
Union Drawn Steel Div. Republic  
Steel Corp. 38  
Union Wire Rope Corp. 81  
United States Steel Co. 50  
United States Steel Supply Div.  
United States Steel Co. 50  
United Wire & Supply Corp. 171  
Universal Ball Co. 147

**V**  
Vanadium Corporation of Amer-  
ica 159  
Van Huffel Tube Corp. 19  
Verson Allsteel Press Co. 129

**W**  
Wallack Bros. 170  
Weirton Steel Co. 133  
Weiss, B. M., Co. 188  
Weiss Steel Co., Inc. 190  
Weldit, Inc. 138  
Wheelock, Lovejoy & Co., Inc. 64  
Wheland Co., The 146  
Wickwire Spencer Steel Div., The  
Colorado Fuel & Iron Corp. 26  
Wiggleworth Industrial Corp. 182  
Wilkie Die Products Co. 184  
Williams, E. H. 183  
Willson Products, Inc. 120  
Wilmat Engineering Co. 88  
Wolverine Tube Div. of Calumet  
& Hecla Consolidated Copper  
Co. 80  
Wysong & Miles Co. 131

**Y**  
Yoder Co., The 27  
York Steel Construction Co. 190  
Youngstown Sheet & Tube Co., The 16

## CLASSIFIED SECTION

Business Opportunities 190  
Clearing House 178-189  
Contract Manufacturing Appears  
in first and third issue of each  
month. See Mar. 6 & Mar. 20.  
Employment Exchange 191  
Wanted 190

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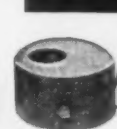
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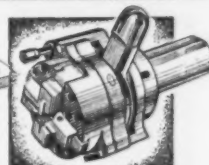
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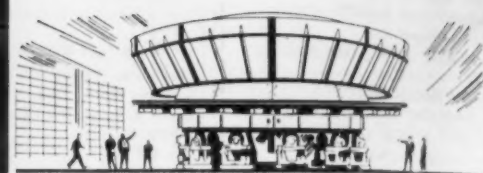
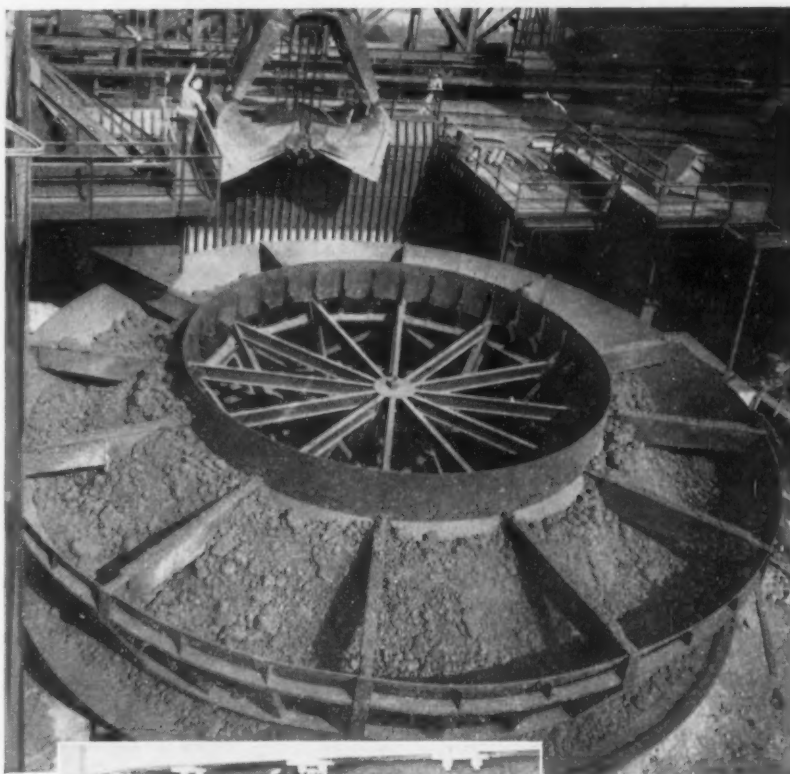
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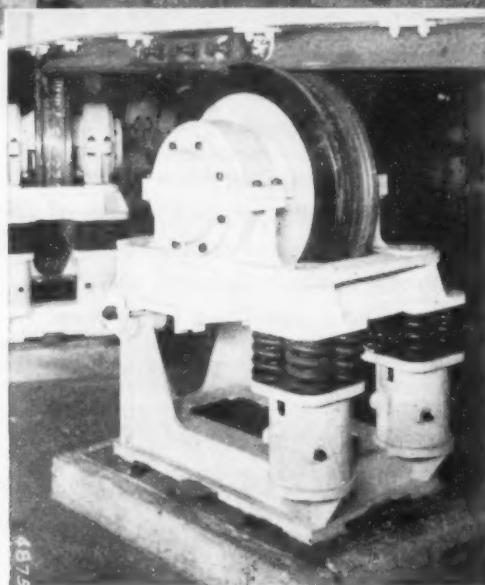
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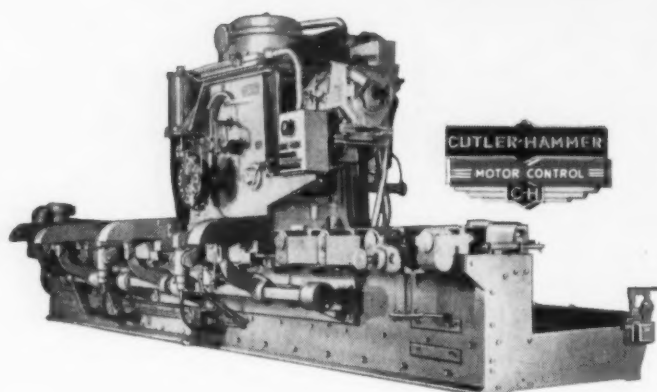


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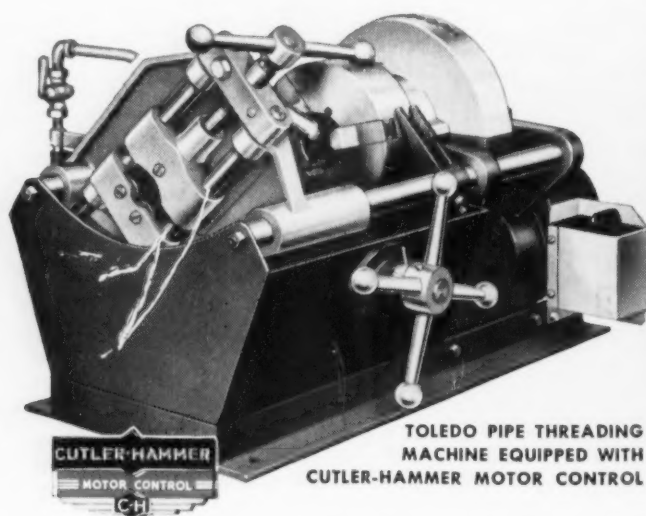
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